A demographic and socio-economic study of March 1550-1750

Thesis

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A DEMOGRAPHIC AND SOCIO-ECONOMIC STUDY OF MARCH 1550-1750

by

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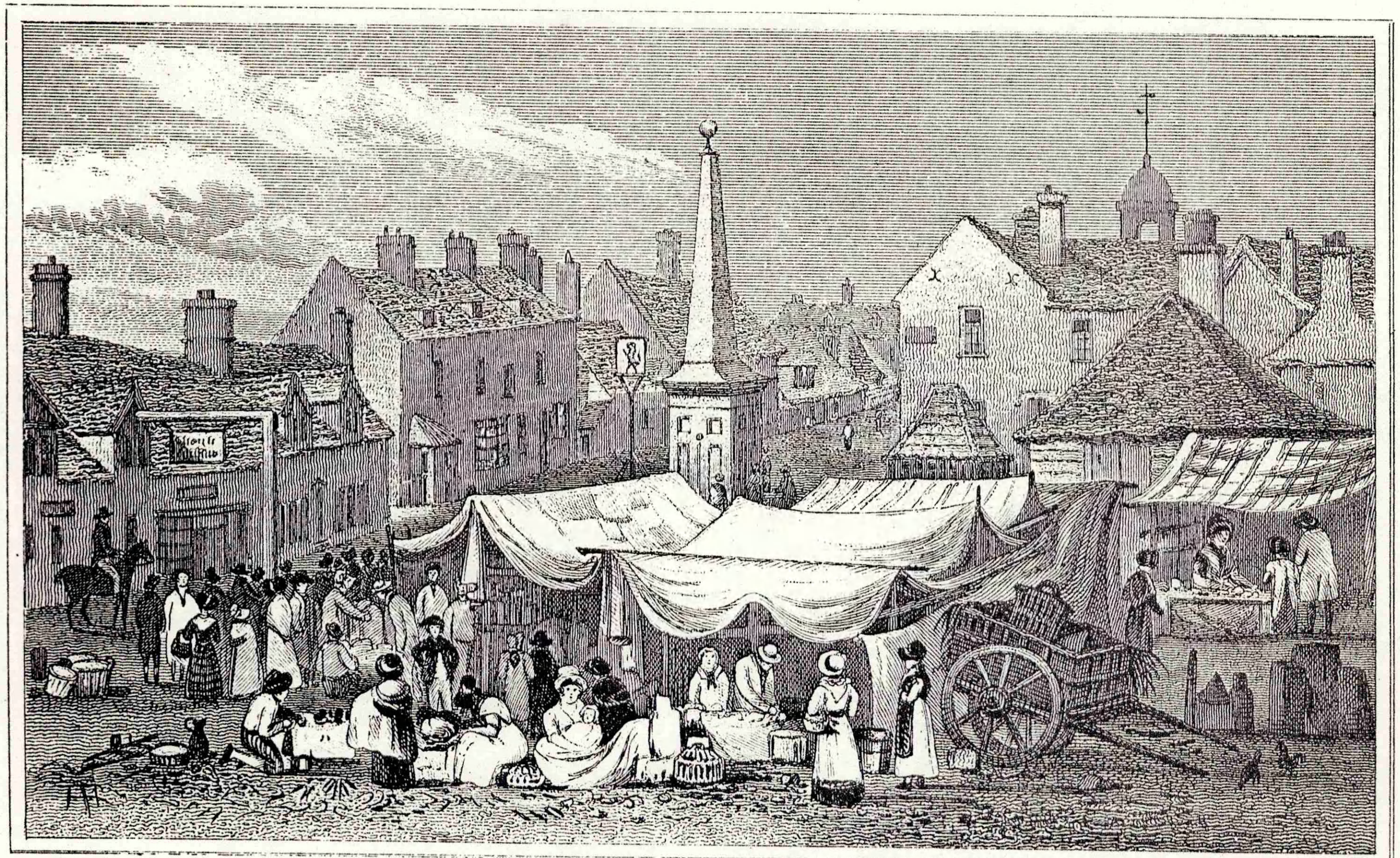
A disertation submitted in fulfillment of the requiremnts
of the degree of Master of Philosophy of the
Open University 1987

Date of submission: 1 October 1987

Date of award: 21 December 1987



MARCH, IN THE ISLE OF ELY, CAMBRIDGESHIRE.

Abstract

This thesis aims to show the importance of the demographic characteristics of the Isle of Ely in general and of March in particular. It highlights the parochial and topographical contrasts of the Isle of Ely, characteristics which are used as a key to unravelling some of the perplexities of the demographic regime of fenland Cambridgeshire.

The introduction places the study of March's demographic, social and economic structure into the context of the work already completed on the Isle of Ely and other areas of eastern England, while chapter 2 discusses the limitations of the family reconstitution of March.

Chapter 3 examines the Isle of Ely's demographic history and establishes the periods of population growth and decline. It quickly traces the general growth and decline of the demographic situation from the late Anglo-saxon period to the sixteenth century, before concentrating in detail on the population changes from the mid-sixteenth to the mid-eighteenth century. It then considers the problem that the mounting population caused and the pressure that it put on land use. Chapter 4 investigates the means by which the inhabitants of March earned a living and establishes that the occupational structure of March changed over time.

The incidence of infant and child mortality is discussed within chapter 5. This chapter compares the levels of infant and child mortality in March with the results of other family reconstitution studies before looking at the incidence and levels of infant mortality within other Isle of Ely communities. It then suggests some of the probable causes behind the high level of infant mortality evident within March.

Chapter 6 investigates the male age at first marriage and questions whether this much neglected aspect of all

demographic statistics was responding to the level of real wages or mortality levels. Marriage seasonality patterns within the Isle of Ely are explored in chapter 7. Finally, the conclusion draws together the findings and relates them back to the questions outlined in the thesis, with suggestions for further research into the demographic aspects of communities lying within 'drowned' economies.

Acknowledgements

Among the many people who have made this thesis possible I should especially like to thank Richard Wall for his supervision and encouragement. His knowledge and enthusiasm for the subject and his value of scholarship were a constant encouragement during its preparation and writing. I should also like to express my thanks to Dennis Mills who directed and guided the early stages of this research.

I am equally indebted to the members of the Cambridge Group for the History of Population and Social Structure. Their contribution to the field of historical demography is widely acknowledged and they are always pleased to share their findings and material with others. I have also benefitted from the advice of their visitors, particularly Professor Ann Kussmaul. Furthermore, I would like to thank the archivists and librarians with whom I have had contact during the course of this research.

In addition I would like to thank the Higher Degrees Office of the Open University for a research studentship. Without this financial support the research would have ceased in December 1982 when three years of notes, part of the family reconstitution and two sets of school exercise books were stolen in London.

I should also like to thank the many friends who came for coffee and stayed to sort out some family reconstitution slips into alphabetical order as well as those guiders who gave up part of their daily rest hour in camp to help with this monotonous task. I would further like to express my gratitude to all those who provided shelter, warmth and sustinence on my many wanderings in the course of this research. Finally, I wish to thank my mother, sister and brother for their continued support.

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Chapter 1

Introduction

The academic discipline of historical demography is still very much in its infancy, even though there has been a general interest in this field for many centuries.[1] Theories relating population growth to the economic and social structure of society have been in evidence since classical times, culminating in the works of Concordet,[2] Godwin,[3] Malthus[4] and Marx amongst others. Concordet and Godwin were clearly influenced by the ideals of the French revolution while Malthus believed that man instinctively controlled the growth of the population by ‘preventative checks’. If these ‘preventative checks’ failed, Malthus assumed that they would be replaced by ‘positive checks’, which would cause the population to return to a level in equilibrium with its resources. The arguments and theorising continued with Marx introducing the mode of production on the side of subsistence and industrialisation taking the whole argument out of the realms of nature and into that of political economy.

These diverse qualitative arguments and theorising continued until the early 1950’s when the move to quantitative analysis began to develop, inspired firstly by the pioneering work of Louis Henry, the French Institut National d’Etudes Demographiques, and the Cambridge Group for the History of Population and Social Structure, and secondly with the use of computing techniques for collecting, processing and analysing the substantial amounts of data generated by such studies.

Henry[5] devised a method for utilising the information within the French parochial registration system which was adapted for use on English parish registers by Wrigley.[6] This analytical technique, centred upon the completion of family reconstitution forms for every known and deduced marriage within a given community, reconstructs the demographic characteristics of past populations, while the ensuing analysis attempts to explain the cause and effect of these characteristics.

The first major English study that occurred from this development and adaptation was presented in Wrigley's detailed papers on the demography of the community of Colyton.[7] Since this time, numerous research papers and theses have used family reconstitution studies to examine demographic aspects of early-modern England.[8]

While a great deal of historical and demographical research has been carried out in Cambridgeshire,[9] the communities within the Isle of Ely have been ill-served by both the demographic and socio-economic historian. The numerous antiquarian works,[10] and some of the more recent local history studies[11] in evidence for the Isle of Ely tend to reflect undisciplined curiosity or local pride. The only historical aspects of the Isle of Ely to receive serious attention have been the great drainage schemes[12] and its ecclesiastical administration.[13] Even Spufford's well known work on the economic, educational and religious life of the inhabitants of three Cambridgeshire villages from 1525-1700 was written with little recourse to fenland Cambridgeshire for her 'intention was to leave the Isle of Ely out of my calculations altogether'.[14]

One of the villages chosen for this study was that of Willingham, a community lying on the edge of the fens, in what Glasscock termed the 'upland' of the county of Cambridgeshire.[15] From the result of this study scholars have attributed the demographic and socio-economic characteristics of the fen-edge village of Willingham to those communities lying in the Fens. The viability of this supposition will be discussed more fully in the ensuing study of March where it is suggested that not only do communities in an area of deep fen exhibit different characteristics to those along the fen-edge but that topographical differences within the Isle of Ely produce variations in the demographic and socio-economic characteristics of the parishes within fenland Cambridgeshire.

Consequently, this detailed study of March from 1550-1750, set against the backcloth of fenland Cambridgeshire as much as possible, aims to shed a little light on some aspects of the demographic, economic and social structure of the Isle of Ely. Information was taken from as many sources as was relevant and linked together in order to provide a coherent body of information at the hundred and parish level.

1.1 The choice of research area

The initial choice of research area and period was determined by some prior research into the fen-edge community of Willingham where peculiarities were observed within the infant mortality patterns and sex ratios at baptism.[16] Although the sex ratio at baptism constantly indicated a surplus of male infants, the level of female infant mortality was **consistently** greater than the level of male infant mortality for corresponding periods between 1550 and 1812. Hence, although more males were being baptised, a greater proportion of the baptised females were dying, implying either a sex discriminating disease or infanticide in operation within this area. This peculiarity was particularly pronounced in the seventeenth century amongst those families which had a known date of marriage, when a substantial excess of female infant mortality occurred in conjunction with a substantial increase in the sex ratio at baptism.

This striking aspect of infant mortality led to the question as to whether the characteristics evident in this fen-edge village, especially with regard to the seventeenth century, were isolated or due to some specific external causes such as its proximity to the fen. If this latter case were so, then communities within fenland Cambridgeshire should exhibit these characteristics more markedly.

The choice of March rather than any other fen community was governed by its size and availability of records. The first requirement was that the community had to be of such a size that it was possible to study it completely. If it was too large the reconstitution would have had to have been limited to a proportion of the population, too small and the results would have become statistically unreliable. The second requirement was related to data availability. As the research project was being based on nominative and aggregative data, the parochial registration system had to be suitable for a family reconstitution study for the period 1550-1750, a half century either side of the seventeenth century.

The suitability of the parish registers for the Isle of Ely were checked following the outline suggested by Drake.[17] Parish registers survive for all of the Isle parishes, but to varying degrees of completeness.[18] Eventually, seven spatial units, lying on both the peat and silt fen, were chosen for a detailed aggregative study.

While the parish registers were extant for Ely Holy Trinity,[19] and Wisbech St Peter,[20] this was not the case for March,[21] Doddington,[22] Ely St Mary,[23] Haddenham,[24] and Wisbech St Mary.[25] The registers for March which began in 1548, were mainly extant with the only gap being in 1554-1557. Although Doddington registers were extant, they did not begin until 1681, while Ely St Mary, starting in 1600 has no extant registers during the Interregnum, except for 1648-9. Wisbech St Mary, commencing in 1559, had gaps from 1570-78 and 1590-92 inclusive. Haddenham registers began in 1570, but unfortunately had no extant register for the periods 1584-85, 1592-93, 1641-42, 1651-53, 1663-69 and 1684, although Bishops' Transcripts[26] were available for the period 1664-1668. These gaps in registration for Haddenham, were unfortunate since the registers would have been ideally suitable for a family reconstitution as both parents were given for all baptismal data from 1600, and for all infant and child burials from 1633.

From these registers the choice of a community for a family reconstitution study eventually lay between March and Wisbech St Peter. March was eventually chosen as its registers gave the relationship of the deceased to the head of household and the parent(s) of the baptised child more consistently than Wisbech St Peter.

1.2 The research area

March is situated on the northern edge of a fen gravel island, six metres above sea level, where the road between Ely and Wisbech, crosses the old course of the River Nene.[27] Although March is now a parish in its own right, up until 1868 it was a chapelry of Doddington.[28]

Prior to the late nineteenth century, Doddington was the largest parish in Cambridgeshire, as well as one of the largest in the country, and included the hamlets of Benwick and Wimblington, as well as the chapelry of March.[29] During the Middle Ages Doddington was one of the most important places in the Isle but by 1433 the Bishops' ceased to use the Manor as an official residence. It was at about this time that the importance of Doddington waned, while March began to grow, and outstrip Doddington.[30]

After the vacancy of the See from 1581-1600, the manor came to John Peyton, the Governor of Jersey. After the death of his wife in 1615[31] this manor became his principal residence. From 1658, the Peytons were occasionally Rectors of Doddington with the last one being the Reverend Algernon Peyton who died in 1868. This line of manorial descent is important to the ensuing study, in that the Lord of the Manor was often resident and exerted some influence upon the socio-economic structure of the community. The influence of the Peytons, for example, could still be seen in the mid-nineteenth century when the Doddington Rectory Division

Act of 1856 provided for the elevation of the chapelry of March to the same rectorial status as Doddington but failed to come into force until the death of Algernon Peyton in 1868.[32]

By the sixteenth century March was well established as a minor trading port. In 1566 eight boats capable of carrying grain and coal were noted,[33] while in the mid-seventeenth century, Dugdale observed boats trading in coal and general commodities.[34] Trade flourished, especially as it was easier to move goods by water than by land.[35] On either side of the river in March, open spaces ringed by houses, acted as market places and quays began to develop. The present rectangular area called Broad Street, on the north side of the river, a relict of these former days, still remains almost completely intact. A much larger and more irregular open area, is all that remains of this development on the south side.

This water based commercial activity continued to the late seventeenth century, when the drainage works in and around March caused the water flow along this waterway to slow to such an extent that the river became silted up, allowing only boats with a shallow draft a passage. However, water traffic was essential to the socio-economic structure of fenland Cambridgeshire, especially as the rates of carriage on the Great Ouse were lower than overland transport. Willan estimated that the cost of water borne transport was as low as one penny per ton per mile,[36] while Wilson stressed that 'overland carriage doubled the price of the cargo every two miles'.[37]

The demographic and economic development of the Isle was complex due to the its 'drowned' economy[38] and while the internal structure and dynamics of a community deserve attention, it is impossible to discuss the demographic and socio-economic characteristics of March without an adequate understanding of the distinctive topographical, economic and ecclesiastical structure of the Isle of Ely.

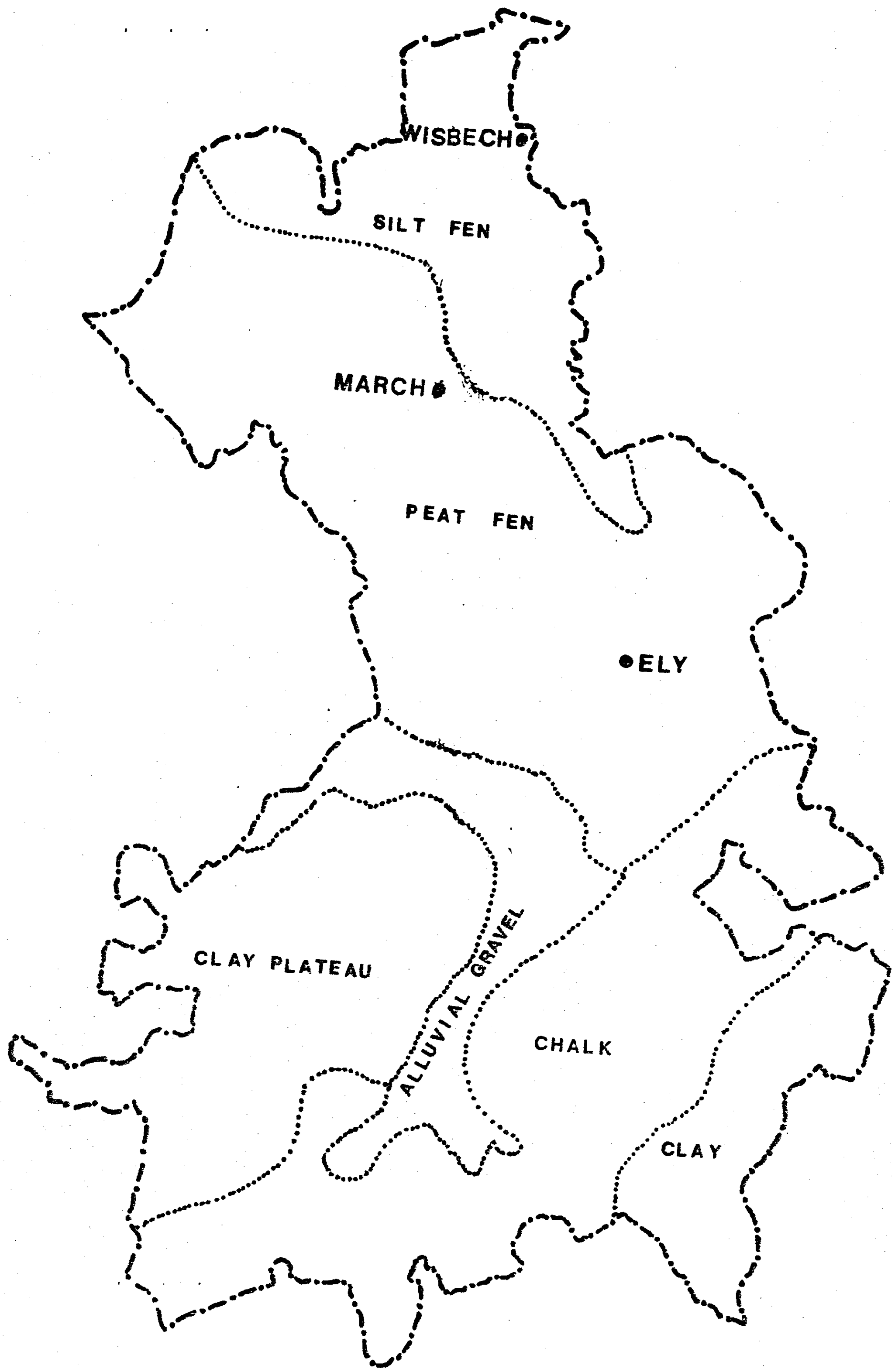
1.3 The physical environment

The Isle of Ely, a vast shallow basin often inundated by both fresh and salt water, was first described by Felix, the anglo-saxon biographer as a 'fen of immense size [with many] foul running streams, and also many islands, and reeds and thickets',[39] and although the general process of change during the great drainage schemes of the seventeenth century has been fully discussed by Darby[40] its particular effects on any single community remain to be studied.

The two distinct regions of fenland Cambridgeshire have led to a diverse and occasionally conflicting topographical and economic development.

The northern silt or marshland provided rich pasture prior to drainage, unlike the wild, mainly inhospitable landscape of the peat fen. The southern peat fen which begins a few miles north of Cambridge stretches northwards to south of Wisbech, where both the peat and silt fens merge together. (Figure 1.1)

Figure 1.1 Natural regions of the Isle of Ely



Source: Geological ordnance survey maps

Efforts have been made over the centuries both to improve drainage and to reclaim land. Prior to the Reformation, the numerous monastic houses dotted around the Isle were responsible for keeping the cuts open and the banks in repair.[41] The sixteenth century dissolution of the monasteries had a great impact upon the condition of the drainage since many of their successors either knowingly or unknowingly, failed to assume these responsibilities.[42]

By the seventeenth century, troubled about the state of the treasury, James I hoped to increase his income by draining some of the fens and making them usable all the year round. In 1630, Francis, the then Earl of Bedford, undertook to drain the area which has since become known as the Bedford Level. Other 'Adventurers' joined with the Earl in advancing capital for the undertaking and Cornelius Vermuyden, a Dutch engineer, was employed to carry out the work. However, this undertaking caused many protests from the inhabitants of the Isle, since they felt sure that ecological change would lessen the availability of fish, fowl, reeds and thatch, especially as they knew that the Adventurers, with capital at risk, were intending to take their profit in reclaimed land.[43]

As they had financed the scheme, the Adventurers were to have been allocated tracts of fenland for their own use and a court held at St Ives in 1637, allocated each Adventurer a piece of land. The fenmen complained bitterly and on the grounds that the area was still subject to flooding, especially in the winter, this decision was reversed with the decree that when drained, each man was to remain in possession of his customary rights.[44]

The drainage work of Vermuyden, though interrupted during the Civil war, resumed in 1650, and by the 1660's, the fens were beginning to drain between Peterborough in the west, Wisbech in the east and as far south as Ely.

However, the drainage schemes failed to leave enough fresh water force to scour the rivers, which meant that water levels became insufficient for navigation in many places. This situation was made worse by the shrinkage of the peat on the newly drained lands[45] which resulted in the rivers with their unshrinking alluvial beds standing high above the surrounding countryside, between even taller embankments.[46] Even when drained, inundations were still frequent and occasionally had disastrous consequences. Consequently, the landowners began to take matters into their own hands, and in 1727 Parliament approved the creation of commissioners for draining the Haddenham level which was the first of many independent draining districts within the Isle of Ely.

The fenland economy was thus influenced by the amount of water brought into it by the many and varied fresh and salt water inundations.[47] In the winter, the water often covered a greater part of the countryside while in the summer, as land dried out it became available for pasture.

However, while the distinctive geography of the Isle of Ely exerted a tremendous influence upon the economy of the fens, the Bishops' of Ely also left an indelible mark upon both the secular and ecclesiastical administration of the Isle.

1.4 Ecclesiastical administration

From at least 1541 the Isle of Ely has been described as, or at least implied to be a county palatine.[48] This description, though not strictly correct, shows that the liberty enjoyed by the Bishops' of Ely, was extensive enough to leave a decisive mark upon the administrative geography of Cambridgeshire. This extensive liberty even resisted Thomas Cromwell's determination for the dissolution of all franchises and liberties within the realm, and as late as 1851, it was stated that 'Cambridgeshire virtually includes two shires or separate jurisdictions, the shire proper and the Isle of Ely'.[49]

Ely monastery became the seat of the Bishop of Ely in 1109 and as landholders the Bishops' constituted a dominant element in the economic and religious administration of the Isle of Ely. The Bishop of Ely had a virtual monopoly of ownership within the Isle until the beginning of the seventeenth century, when part of its land, including March, was alientated from the See. Although the vacancy of the See from 1581-1600 tended to bring the administration in closer line with that of the county of Cambridge, its administrative distinctiveness remained until the mid-nineteenth century since it possessed its own assizes, chief justices, justices of the Peace, gaols, and rates separate from that of the county, while its own Chief baliff had powers equivalent to that of the sheriff of the shire.[50] Hence, the Isle was treated almost as a separate county, and it was not until 1836 that an Act was passed 'for the extinguishing of the secular jurisdiction of the Bishop of Ely'.[51]

Thus the Bishops' left an indelible mark upon both the secular and ecclesiastical administration of the Isle, with tensions occasionally arising between the Lords of the Manor and the Bishops' after the vacancy of the See.

1.5 Conclusion

Within the last three decades considerable progress has been made within the field of historical demography and the pioneering work of the Cambridge Group for the History of Population and Social Structure has been responsible for the development of sophisticated techniques for calculating demographic characteristics of past populations. This research, though extremely important has tended to divert attention away from the question that relates demographic characteristics to socio-economic conditions.

The range and variability of questions concerning the internal processes and structure of an individual community within the Isle of Ely are numerous. This study directs its attention to the clearly related theme of how demographic behaviour was linked to variations within the socio-economic patterns within the community of March. The study is based on both aggregative and nominative data and is mainly concerned with marriage seasonality and the key demographic variables of infant mortality and age at marriage. Of these the demographic variable concerning infant mortality is considered with regard to socio-economic factors. In order to add to the socio-economic data evident within the parish registers, other extraneous sources were used to supply information on the occupations of the inhabitants.

The task of analysing the demographic and socio-economic characteristics of the community of March was a time-consuming process but necessary in order to become aware of the forces which shaped the community of March. There is, nevertheless, a major drawback of any local study which lies in the assumption, implicit in the approach, that the spatial unit comprised a 'geographical community' and to limit the danger of artificially creating such an impression by the use of sources peculiar to it, March will be constantly viewed against the backcloth of the Isle of Ely.

References

1. For example see King (1696); Short (1797); Short (1750); Glass (1965) pp159-220 and Laslett (1976).

2. See Strangland (1904) pp18-39 for a discussion of Concordet's doctrines.

3. See Strangland (1904) pp18-39 for a discussion of Godwin's doctrines.

4. See Malthus (1798) and Petersen (1979). Malthus took exception to his father's endorsement of the views of Godwin and Concordet on the perfectability of man and as a result produced this essay on population.

5. See Gautier and Henry (1958) and Fleury & Henry (1965).

6. Wrigley (1966)

7. See for example Wrigley (1977B) and Wrigley (1968)

8. For example see Wilson, thesis (1983); Souden, thesis (1981) and Levine, thesis (1976) as well as articles and research papers such as Reynolds (1979) pp31-7; Wilson (1984) pp225-40; Wrightson & Levine (1979); Wrigley (1977B) pp9-21; Wrigley (1968) and Wrigley & Schofield (1983).

9. For example see Mills (1980A); Mills (1980B); Ravensdale (1974) and Spufford (1974).

10. For example see Walker (1930); Watson (1827); Gardiner (1898) and Ivatt (1933).

11. For example see Bevis (1983); Bevis (1980); Bevis (1962); Hooper (1951) and Turnbull (1959).

12. See for example Darby (1983); Darby (1973); Darby (1956); Darby (1938) and Summers (1976)

13. See for example Heal, thesis (1972) and Miller (1969)

14. Spufford (1974) p5

15. See Glasscock, thesis (1963). This term was used by Glasscock in his thesis purely to distinguish the low lying fens of the Isle of Ely from the rest of the county of Cambridgeshire and will be used as such throughout this thesis.

16. Reynolds (1979) pp31-7

17. Drake (1974) D301 Unit 4

18. See Farrar (1979) for a listing of the completeness of the registers for the Isle of Ely parishes. The starting date of the parochial registers for the Isle of Ely is tabulated in Appendix 1.4.

19. CRO; Ely Holy Trinity parish registers

20. A microfilm of the Wisbech St Peter registers is available in the Wisbech and Fenland Museum.

21. CRO P/116/1/1-P/116/1/3

22. CRO; Doddington cum Wimblington and Benwick parish registers.

23. CRO; Ely St Mary parish registers

24. A transcription of the Haddenham parish registers is avalaible in the CRO.

25. A microfilm of the Wisbech St Mary registers is available in the Wisbech and Fenland Museum.

26. See Owen (1971) pp46-53

27. In the Middle ages, it was usually known as Mercheford, and probably owes its origin to the ford on the old course of the River Nene.

28. The Doddington Rectory Division Act (1847) (10 & 11 Vic c.3) provided for the separation of March from Doddington, and its elevation to rectorial status. This was amended by the Doddington rectory Division act of 1856 (19 & 20 Vic c.1), although it did not come into force until the death of the Reverend Algernon Peyton in 1868.

29. The parish of Doddington, prior to 1868, extended to 37,801 acres.

30. VCH Vol IV p112

31. VCH Vol IV p113

32. VCH Vol IV p119 quoting 19 & 20 Vic c.1 which amended an earlier Act of 1847, 10 & 111 Vic c.3

33. Fenland Notes & Queries vii, 95

34. Darby (1940) p227, quoting B.M. Lansd. MS 722, ff29-38

35. Yarranton (1681) p92

36. Willan (1967) p120-21

37. Wilson (1965) p82

38. The frequent inundations of both fresh and salt water in the Isle of Ely, coupled with the seasonal autumnal influx of water gave fenland Cambridgeshire a distinct economy.

39. Goodwin (1848) p20-1

40. See for example Darby (1983) and Darby (1940). as well as Summers (1976).

41. For a discussion of this see point see Miller (1969).

42. Darby (1983) p43-4

43. Darby (1983) pp52-53, 60-68, also see Summers (1976).

44. See Darby (1983) pp54-9

45. For a detailed discussion of this see Mason (1973). In an undrained state, peat contains up to 95% of its weight in water. Consequently, when exposed to the atmosphere it oxidises causing further shrinkage and wastage. With this wastage, a general lowering of the ground occurs.

46. To this day top soil is lost through wind erosion, and is a continuing problem for the modern Fenmen. The top of the Holme post marks the ground level of 1848, in 1933, the ground lay twelve feet nine inches below the posts top. The fen can still be seen in its undrained natural state at Wicken Fen a National trust property. Its 750 acres have never been ploughed and consequently there has been less wastage due to oxidisation. This area now stands several feet above the surrounding countryside.

47. For example see Young (1800) who describes the disastrous flood of 1799. The water from this inundation was still in evidence 6 months later in May 1800.

48. See Cam (1963) pp216-9. Also see Historical MSS Commission, 11th Report, which notes that the Assembly book of Kings Lynn for 1610 states that 'Sir Robert Hitcham, knight, the Queens Majesties Attorney-general is proposed to come to this towne from the Assizes at Norwich to take his journey to Elie, where he is the judge of that County Palatyne'.

49. Gardner (1851) p28

50. H.O. 52/58 By the time of the Reform Bill of 1832, the administrative situation within the Isle was beginning to change, and the question of the abolition of the liberty of the 'Palatine of Ely' was being raised. There was opposition, although the corporation of Wisbech, accepting the ending of the liberty of the Isle wished it to be treated as a separate county, since its population was greater than some English and Welsh counties.

51. The Act 6 & 7 Wm iv amended by 7 Wm iv & 1 Vic c.53 was passed, even though a memorial praying for the continunace of the separate jurisdiction of the Isle was presented by 350 clergy, gentlemen and yeoman.

Chapter 2

The March Family Reconstitution

2.1 Introduction

Micro-scale studies are crucial to our understanding of the way historical societies operated.[1] The major demographic method behind such studies is family reconstitution. As this particular study uses data from the family reconstitution for March from 1550-1750, an understanding of the data and sources used in compiling the reconstitution is needed to facilitate the interpretation of the results obtained. The basic principles behind this demographic technique and an assessment of the sources used will initially be viewed in the context of the national trends in registration. A detailed assessment of the registers for March will then be undertaken.

Henry and Fleury first developed the technique of family reconstitution at the Institut National d'Etudes Demographiques in order to examine French population behaviour in the eighteenth century and in particular to discover if and when conscious family limitation might have occurred.[2] The French parochial registration, on which Henry and Fleury based their technique, is exceptionally detailed. When a child was baptised it was usual for the cure to record not only the child's birth and baptismal date but also the father's name, residence and occupation, the mother's christian and maiden name, while the child's godparents or sponsors were often noted.[3] In contrast to this, the English parochial registration system prior to the beginning of civil registration in 1837[4] usually recorded only the child's name, date of baptism and father's name. Occasionally the mother's christian name was recorded, while the father's occupation, although sometimes mentioned, was rarely in evidence for very long periods.

Since Wrigley[5] adapted Henry's development of the technique of family reconstitution for use on English parish registers, the adequacy of the parochial registration system has been subjected to a great deal of study and debate.[6] Considerable difficulties were initially encountered since this method of analysis demands a high level of reliability and detail within the registered events. Thus, when it was adapted to the English registration system allowances had to be made for the fact that vital events were not described in as much detail as was common in France.

The sequence of operations in family reconstitutions was outlined by Wrigley and the procedures he suggested in this classic book have been used by most researchers undertaking a family reconstitution by hand.[7] This process is divided into six stages:-

a) Preliminary analysis of the register

b) Transfer of raw data from the register to the standard slips

c) Sorting the slips into alphabetical order by date

d) Reconstitution of families on Family Reconstitution Forms

e) Calculations done on the Family Reconstitution Forms

f) Derivations of the measures of fertility, mortality etc.[8]

Although the vast majority of family reconstitutions have been completed by hand, the computerisation of family reconstitutions is now in progress.[9]

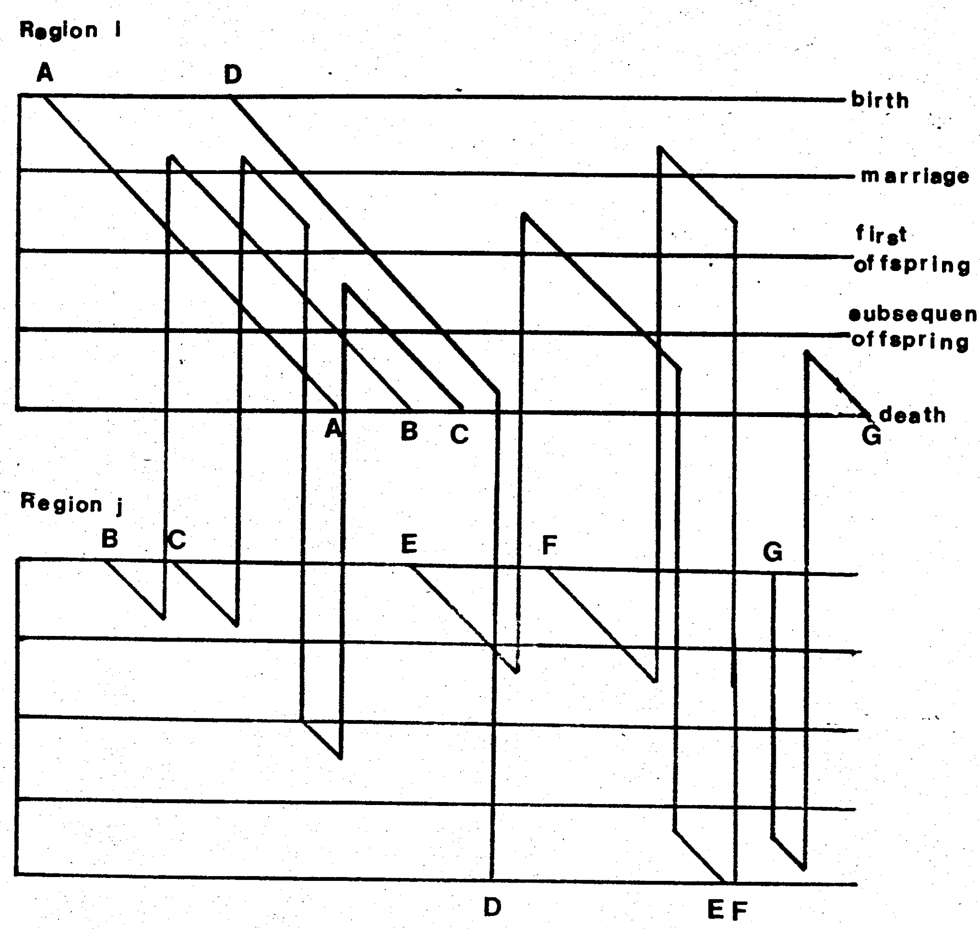
A family reconstitution study involves compiling the vital events evident in the parish registers and bishop's transcripts[10] into individual family units. Each of the family reconstitution forms is headed by a married couple and contains all of the information derived from the parochial registration system pertinent to this couple.

If all the possible information was available for each individual family unit, each form would contain the marriage, birth, baptismal, death and burial dates for each of the spouses, as well as data regarding any previous or later marriages. There would also be information concerning their place of residence at baptism, marriage and burial, their occupation and level of literacy,[11] as well as their respective parents' names, residence and occupation. Apart from this, there would also be the names, birth, baptismal, marriage, death and burial dates for each of their offspring. However, in practice, few families in English reconstitution studies reach this level of completeness due to imperfections within the parochial registration system as well as migration.

Once the relatively simple but extremely arduous and time consuming process of family reconstitution has been completed various statistics can be calculated. The range of demographic variables obtained in this way such as the mean age at marriage and age-specific vital rates, are impossible to derive by any other method.[12]

Within the past four decades the techniques involved in family reconstitution studies have revolutionised the study of local populations. The many and varied types of family unit evident within a family reconstitution study have been discussed by Souden[13] and can be diagramatically shown on a two way lexis diagram. (Figure 2.1)

Figure 2.1 A two way lexis diagram showing the type of family units within a family reconstitution form.



In Figure 2.1 region i represents the parish under observation, while region j represents the rest of the world. The vertical axis shows age in terms of the life-cycle: namely birth/baptism, marriage, the first offspring birth/baptism, subsequent offspring birth/baptism, and finally their burial. Time is measured along the horizontal axis. Life paths are then illustrated upon this diagram in a stylised form. Where a diagonal path in i crosses an horizontal parameter the appropriate vital event can be observed in the family reconstitution study. The events contained in j are unobservable without additional information gleaned from other sources.

Hence the families in observation in a reconstitution study range from those few family units who spend all their life within the same parish, to those itinerant travellers and short-term migrants who have cause to have an event recorded in the parish registers as they pass through.[14]

The family units who spend all their life within the same parish, having been born, married, produced their offspring and eventually dying there, are few and far between, with only three evident in March from 1550-1750.[15] (Life line A) One such family is that of Reynold and Mary Sheppherd, who were born in the parish in 1608 and 1613 respectively, married in 1632, and produced eleven offspring. Mary eventually died in 1652, with Reynold succombing two years later.[16]

There are also those who enter observation at, or just after marriage and subsequently stay within the parish until their death. (Life line B) These tend to be mainly brides moving into the parish at marriage. Occasionally their first child is born or baptised within the mother's home parish, and consequently fails to appear in the vital registration events of the parish under observation.[17] (Life line C) Furthermore, others may well be born in the parish, marry and produce their offspring there but lack a burial date because they died elsewhere. (Life line D)

All of the individuals mentioned so far may be thought of as being reasonably settled within one parish for their married life. However, a common situation in all family reconstitutions is where some individuals, while travelling through the parish appear in the parochial registration system, either through the birth or baptism, of their offspring, their marriage or through a member of their family, or themselves dying. (Life lines E, F and G respectively)

The numerous examples of the short-term stayer evident in the fens during the seventeenth and eighteenth centuries falls into three distinct categories. They are either in observation through moving into the area as part of the labour force involved on the fen drainage schemes, itinerant travellers, or through being in jail at Wisbech or Ely.[18]

Since family reconstitution studies are based exclusively on the registration of vital events, occasionally enhanced by information drawn from other sources,[19] lax registration, migration or nonconformity would cause some family units to be either only partially completed or else omitted altogether. Hence, it is important to assess the quality of the registration system. An overview of the deficiencies found on a national level will be discussed before seeing how the registers for March fit into this national pattern.

2.2 The quality of the parochial registration system

Critiscm of family reconstitution studies is often levelled at the coverage of the parochial registration system and the representativeness of the results obtained.[20] The main criteria for undertaking a family reconstitution is that there should be no serious under-registration of the vital events since demographic statistics require accurate information on the parochial registration events.

Prior to civil registration in 1837 the most useful source of information regarding the registration of baptisms, burials and marriages were the parish registers which date from the early years of Henry VIII's break with the Church of Rome. The Royal Injunction of 1538, instigated by Thomas Cromwell, ordered that 'every parson vicare or curate within this diocese shall for every churche kepe one boke or register wherein ye shall write the day and yere of every weddying christenyng and buryeng made within yore parishe'.[21] However, few parishes have registers dating from as early as 1538 or from the re-issue of this injunction in 1547. The majority of parishes with registers dating from the sixteenth century tend to be those surviving from the third and final re-issue of this injunction in 1559 or later.[22]

The main disruption occurring within the parochial registration system was the Civil War and the ensuing Interregnum during which time civil registration was introduced in order to lessen the ceremonial role of the Church. The majority of the country's registers suffered badly during the Commonwealth from lax registration despite the legislature's attempts to improve them. The parochial registration system was again nationally disrupted in the civil unrest of 1688-9. However, these disruptions apart, the quality of registration in the seventeenth century was somewhat better than that in the eighteenth and nineteenth centuries prior to the start of civil registration. From the late seventeenth century to the beginning of civil registration in 1837, national variations in the parochial registration system were mainly connected to the four Acts of 1695,[23] 1705,[24] 1752[25] and 1812.[26]

The Marriage Duty Act of 1695 imposed a tax on registration, with strict financial penalties on any priest who failed to register all events. Those ministers who either accidentally or deliberately failed to register all births, baptisms, burials, or marriages may have suffered great hardship until the act was finally repealed in 1705.

Before 1753, the incidence of clandestine marriage was a possible source of under-registration since, 'a marriage by a priest of the Church of England, without banns or licence was valid and indissoluble'.[27] Hardwicke's Marriage Act of 1753 invalidated ceremonies held in places other than those not customarily used for weddings by banns and licence, hence closing down chapels solely used for clandestine marriages. Finally Rose's Act of 1812, enforceable by 1813, specified the format of the baptismal and burial entries, which remained until civil registration was introduced in 1837.

A general analysis of an aggregate sample of 404 parishes has shown that the English parochial registration system included most of the births, deaths and marriages for the sixteenth and seventeenth centuries, while its reliability declined drastically during the eighteenth and early nineteenth centuries, due to the growth of nonconformity, maladministration and lax registration.[28]

Of the parochial registers the marriage register is generally thought to be the more reasonably accurate in that 'the ceremony [was] of more temporal importance to the parties [while] marriages of all dissenters were formerly solemnised in the Church of England, although they might baptise and bury after their own forms in their own chapels'.[29]

Burial registers were not always a complete record of all deaths within a spatial unit as those not following the rites of the established church or entitled to be buried in consecrated ground, such as those dying unbaptised or committing suicide were often omitted. However, the completeness of the burial register from 1666 can be checked against the receipts for the legally required woollen burial clothes, where these survive.[30]

However, whilst the need to dispose of a corpse would necessarily mean that a burial would take place soon after the occurrence of death, a public baptism ceremony might well be delayed for an unspecified length of time. Delayed baptism can lead to serious under-registration of births, especially when the birth/baptism intervals lengthened, hence increasing the chances of children dying unbaptised.[31] However, not all baptisms were necessarily delayed. Those born weak or sickly were often given the sacrament of baptism at birth since children dying unbaptised were unable to have a Christian burial. Hence weak or sickly children were often baptised 'privately' at birth by the mid-wife.

This exclusion of unbaptised children was basically due to ambiguous wording in early legislation. However, the Acts and Injunctions from the seventeenth century onwards were more carefully worded and specifically mentionned unbaptised children and those having a private baptism. The ordinance of 1644 specifically stated that 'The names of all children baptised, and of their parents, and of the time of their birth and baptising shall be written and set down',[32] while the Marriage Duty Act of 1695 noted that 'Diverse children who are born within this Kingdom are not christened according to the usages and ceremonies of the Church of England, and many are christened in private houses do thereby escape payment charged upon them by the said Act.[33] Such children were required to have their birth registered within five days, otherwise a penalty of forty shillings was payable by their parents.[34]

Although the vast majority of births may have been registered during the period that the 1695 Marriage Duty Act was in force, the growth of nonconformity seriously affected the registration system on a national level from the eighteenth century onwards.

Prior to the eighteenth century most protestant dissenters used the rites of the established church for burials and sometimes births and marriages.[35] However, by the late eighteenth century, nonconformists ceremonies were sufficiently common to be recognised in legislation and by

1786, the application of the 1783 Stamp Duty Act was extended to the registers of the Dissenters, Roman Catholics and Jews.[36]

The quality of registration is an important issue because it can have profound effects on the reliability of the demographic statistics calculated. Although the parochial registration system provided a 'record of that ceaseless two way traffic of bodies into the churchyard and babies from the font', it was by no means a complete record.

The parochial registration system normally recorded only the Anglican ceremonies of births, burials, and marriages, with the discrepancy between what actually happened and what was recorded varying, according to the period in question and the conscientiousness of the local incumbent.[37]

Maladministration, including laxity by either the clergy or parish clerk affected the quality of the registration system. Furthermore, through an individual's religious convictions many vital events went unregistered, particularly in the eighteenth century and early nineteenth century, while reasons of convenience or of principle could lead to events being registered elsewhere than the parish in which those involved resided.

With this brief overview of the quality of the English registration system on a national level, the registers for March will now be discussed in detail.

2.3 The March registration system

Within any individual parish the quality of registration depends not only on national legislation, or political events, but also upon the efficiency of the clergy involved. Consequently, it is necessary to discuss the problems and limitations evident within this source material as regards the family reconstitution. The registers for March, in conjunction with the Bishop's transcripts were used in the family reconstitution and as such require a careful appraisal.

The registers for March, which begin in 1547[38] on the second re-issue of Cromwells injunction, are mainly extant, with the only gap being from 1554-1557. The vital events were first recorded on paper, and these loose sheets of paper possibly fragments of an earlier book, have been recently rebound. Towards the end of the sixteenth century, a parchment register was purchased, and a clerk was paid for copying the paper register from 1559 into it.[39] This second register, although badly stained by damp is still legible.

The third register which began in 1655 gives the initial appearance of being carelessly kept during the latter part of the seventeenth and early eighteenth century. For the first three years this register gives the 'names of those who were baptised in the towne of March and also the days of as many births as I could learne, know or find out by their friends',[40] including a baptism from Barbados. One baptism in 1664, is particularly vague in that 'Mary ye daughter of John Sheppard was bpt around Lammas tide in this yere or the Beginning of the foregoing yeare',[41] while other events were entered intermittently, much to the annoyance of the Churchwardens. A memorandum in the mid-eighteenth century shows an attempt to bring the then defective register up to standard, whereby the 'foregoing register being found defective for the years 1727-1749 both inclusive was supplied from the Bishops Office. And we whose names are underwritten below do hereby certify that we have collated these copies with the originals and that they are just and true'.[42]

The quality of the registers are shown in detail in Tables 2.1-2.3.[43]

Table 2.1 the quality of the marriage register

Dates		Quality of registers
From	To	
1558	1639	Full name of both spouses
1640	1704	Full name of both spouses Occasional references to residence, including Scotland and Ireland. Occasional occupational data
1705	1707	Full name of both spouses Occasional occupational data Residence given for both spouses
1708	1727	Full name of both spouses Residence given for both spouses Occasional occupational data
1728	1728	Full name of both spouses Status given throughout, ie single, widowed Residence given if not March Some occupational data given
1729	1732	Full name of both spouses Residence given if not March
1733	1750	Full name of both spouses Residence given if not March Status given throughout, ie single, widowed Occupational data given

Source: The parish registers CRO P/116/1/1 - P/116/1/3

Table 2.2 The quality of the baptism registers

Dates		Quality of registers
From	To	
1558	1558	Child's and father's name
1559	1559	Gives only name of child
1560	1605	Child's and father's name, occasional residence and occupational data given
1606	1607	Name of child and both spouses given Occasional residence
1608	1624	Child's and father's name,
1625	1627	Name of child and both spouses given Occasional occupational data
1628	1638	Child's and father's name
1639	1643	Name of child and both spouses given Occasional occupational data
1644	1654	Child's and father's name Occupational data
1655	1661	Name of child and both spouses, date of the child's birth and subsequent baptism (if baptised). Residence and occupations
1662	1702	Child's and father's name Occupational data
1742	1744	Name of child and both spouses given Residence and occupational data given
1745	1750	Child's and father's name Occupations given

Source: As Table 2.1

Table 2.3 The quality of the burial registers

Dates		Quality of registers
From	To	
1558	1624	Name and relationship to head of family Occasional residence
1625	1627	Name and relationship to head of family. Both spouses given for child entries
1628	1628	Name and relationship to head of family
1639	1643	Name and relationship to head of family Both spouses given for child entries
1644	1654	Name and relationship to head of family
1655	1661	Name and relationship to head of family Both spouses given for child entries Residence and occupational data given
1662	1702	Name and relationship to head of family Residence and occupational data given
1703	1703	Little detail, references in the form of 'a son of', 'a dau of', or 'a wife of'
1704	1705	Name and relationship to head of family Both spouses given for child entries Occupations given
1706	1719	Name and relationship to head of family Occasional occupations
1720	1735	Name and relationship to head of family Chrisoms noted and occupations given
1736	1750	Name and relationship to head of family Residence and occupations given

Source As Table 2.1

The marriage register gives both spouses throughout, with the place of residence intermittently entered in the mid-seventeenth century.

The baptism register consistently gives the child's name and father's name from 1559, and any distinguishing details where there would be grounds for confusion between those families with several branches alive at the same time. Both spouses appear for intermittent years from the early seventeenth century, while occupations are given for the greater part of the late seventeenth century.

Of all the registers, it is the burial register that consistently gives the name and relationship of the deceased to the head of the household except for the first three months of 1703, when all entries appear as 'The wife of', 'The child of' or 'The infant of'. With baptisms, both spouses appear for for short periods during the seventeenth and eighteenth century, an aspect of the parochial registration system which Wrigley stated was necessary for a family reconstitution.[44]

The Isle of Ely parishes were large, with many of them having not only parish churches, but also chapelries and hamlets.[45] As we have already seen, March was a chapelry of Doddington until 1868, therefore the registers for Doddington were carefully scruntinised. Although March had its own burial ground from the fourteenth century, it was feasible that numerous members of the community may have had their vital events recorded at Doddington. The Doddington parish registers began in 1681, although Bishop's Transcripts survive in patches from 1600.[46] However, since the parish of Doddington also included the hamlets of Wimblington and Benwick, as well as the chapelry of March, the place of residence is given for each entry. The entries found in Doddington relating to March were then included in the family reconstitution. Of the 53[47] entries in the Doddington register regarding March residents, 51 were marriages, with one baptism and one burial. Of the 51 marriages, twenty couples had their other vital events, including those of their offspring recorded in the March registers. One such family was that of Thomas Ashley and Mary Johnson, who were married at Doddington in 1703 and had twelve offspring, before they both finally died in 1721.[48] Of the remaining marriages, no evidence of other vital events being registered in either Doddington or March could be found.

The parishes around March were also scrutinised for entries that gave the individual's residence as March. In this way, twelve families known only through the baptism of their children were able to have a known date of marriage entered, as well as the baptism of the first child in seven cases.

A careful appraisal of the vital registration events in March, following the outline of both Drake[49] and Wrigley,[50] indicated that the registers for March, were adequately detailed for a family reconstitution study. However, problems became evident when trying to reconstitute three particular surname sets as well as in the closing stages of the family reconstitution when trying to match male adult deaths to the relevant head of the family and baptisms to brides.

2.4 Matching the events

Within the married population there were occasional difficulties in assigning individuals to the appropriate family reconstitution forms. Matching the vital registration events with the correct family unit became difficult when a number of people with the same name were competing for recognition at the same time. Although March had adequately detailed registers except for the period from 1548-1553 and the first three months of 1703, problems occured when reconstituting the Coward, Shepherd and Walsham surname sets since there were several branches of these families, with the same christian name living in the community at the same time. When the exact identity of the adult male individual was in question the parish clerk often helped by giving the residence of the individual concerned. For example, the Coward family had several branches alive at the same time, with the same name in the seventeenth and early eighteenth century. Hence, if the Clerk had only noted that 'John Coward' had died, it would have been impossible to decide to which of the five John Cowards, this information referred. However, the parish clerk, provided extra information in the form of residence, and so John Coward de Whitehouse was easily recognisable.

On other occasions, by a process of elimination, using later burial dates, coupled with the genealogical information gleaned from the wills, it was possible to reconstitute the majority of the difficult family units.

One such problem were the burial entries referring to a William Coward in 1595, 1602, 1605, and 1609. At this point in time there where nine William Cowards competing for recognition four of whom were children. From the surviving wills the following four genealogies were able to be drawn up.[51] (Figures 2.2-2.5)

Figure 2.2 William Coward will date 1.5.1595

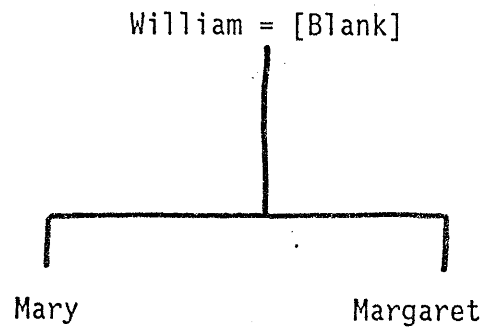


Figure 2.3 William Coward will date 14.11.1602

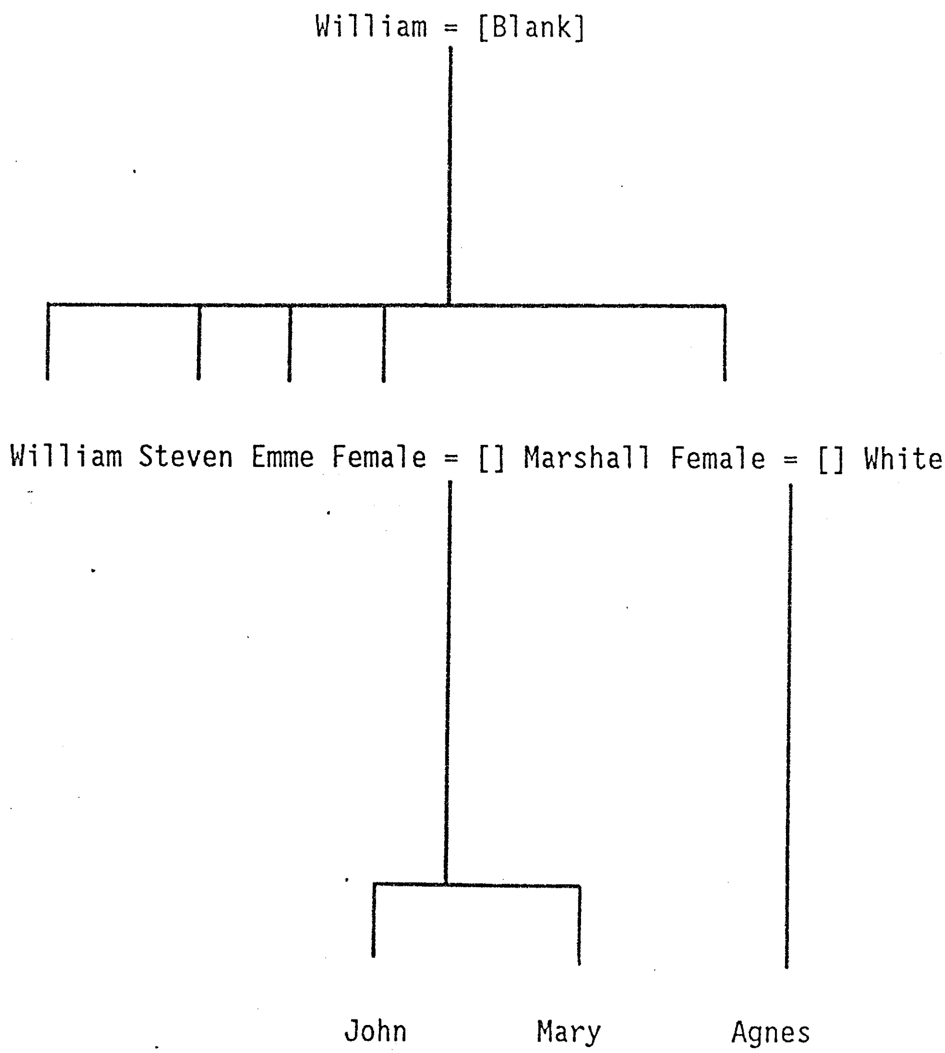
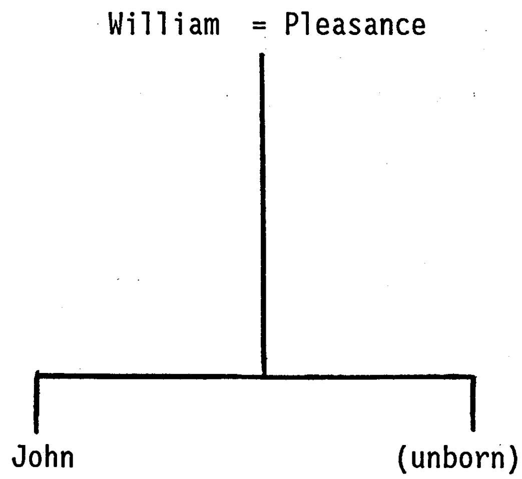
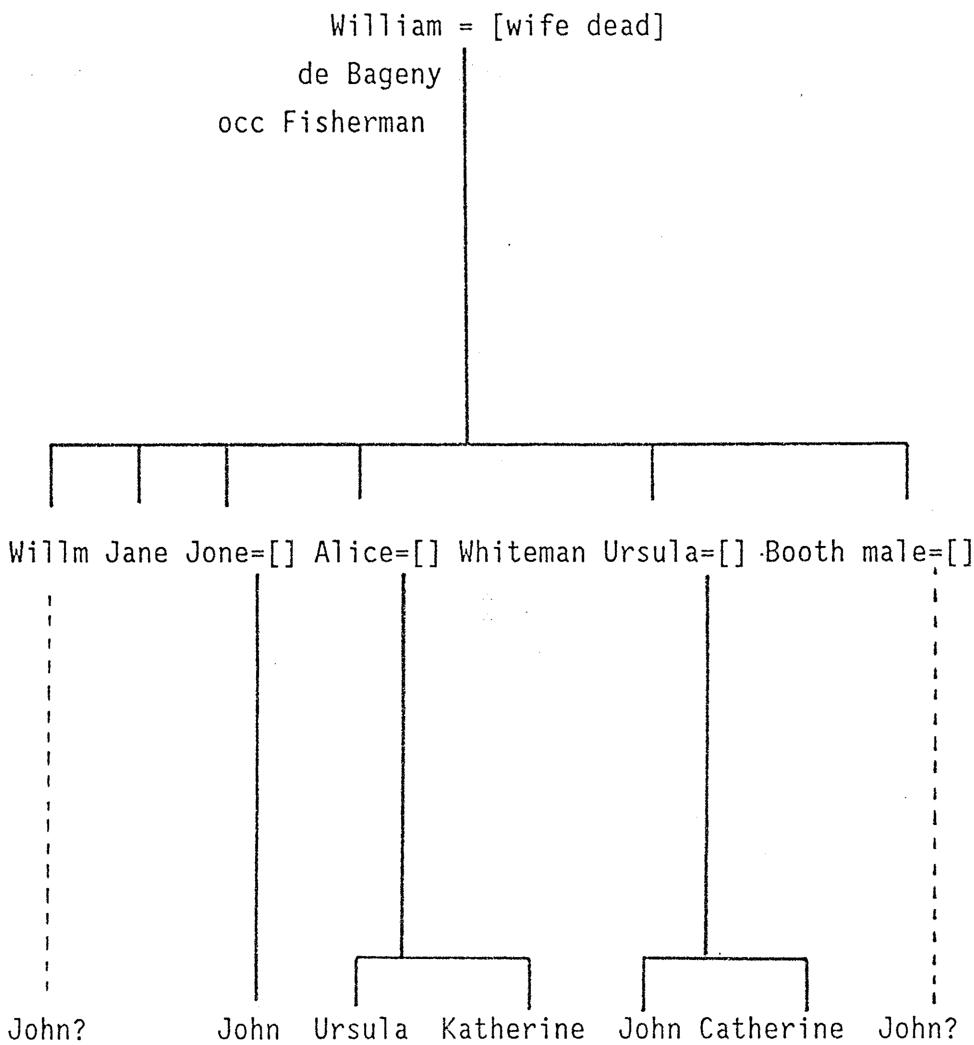


Figure 2.4 William Coward will date 27.9.1605 probate 10.10.1605



John is young; Pleasance is to have the use of the whole house for 21 years, then everything goes to John and his heirs. However, if Pleasance's unborn child is male, then a half of everything goes to him and half to John. If the unborn child is female, then she receives 3 roods of land.

Figure 2.5 William Coward will date 2.5.1609 probate []. 5.1609



Fisherman wealthy 3+ houses one house to John Coward my son's son. If he dies it goes to John Coward, son of my daughter Jone.

From this information it was possible to correctly place the burials of three of the William Cowards, namely that of 1602, 1605, and 1609. However for the 1595 burial of William Coward, the information contained in the will could refer to either William Coward de Whitehouse or William Coward de Browne, since both of these men had children called Mary and Margaret. Hence this burial entry was not assigned to a family reconstitution form.

Whilst wills and other extraneous sources were useful in linking the male heads of family with their corresponding burial date, considerable problems arose when trying to link baptisms to the relevant brides and grooms heading a family reconstitution form. Whilst this particular problem fails to affect the demographic variable of infant mortality[52] to any great extent, it has a considerable effect upon the key demographic variables of age-specific fertility and age at marriage.

Within March, the link between a male child's baptism and its eventual marriage was made in 304 cases. However, linking female baptisms to the relevant marriage, proved exceptionally difficult.

This problem was mainly due to the limited set of female christian names in use within March. For example, Agnes Harrison married William Coward on November 8th 1604 and produced four children.[53] Attempting to find Agnes's baptism proved to be problematic. An Agnes Harrison was borne to John Harrison and his wife Elizabeth on 19th December 1584[54] which would have fitted into the above marriage. Unfortunately, an Agnes Harrison was also borne to William Harrison and his wife Agnes on February 24th 1585.[55] This problem was further compounded by the fact that Peter Harrison, the husband of Agnes died in 1603.[56] Furthermore, an Agnes Harrison married Raphe Coward on October 8th 1605.[57] Hence these three separate individuals could compete for recognition in the two early seventeenth century marriages. Even discounting Agnes the widow of Peter

Harrison, it was impossible to place either of the baptisms of the other two individuals accurately without the use of extraneous sources. As no other sources were available, no link was made.

Similar problems were also in evidence with the two marriages involving couples called William Coward and Margaret Marshall. A William Coward and a Margaret Marshall were married on October 2nd 1621,[58] as well as on October 22nd 1623,[59] producing 6 children each. It would have been impossible to accurately place the respective couples offspring without the additional information, in the form of place of residence, provided by the clerk. Whilst it was possible to find a suitable baptism for a Margaret Marshall it was impossible to place it correctly. A daughter called Margaret was borne to Peter Marshall and Eme Coward and baptised on June 13th 1592[60] but it was impossible to assign this with certainty to either family reconstitution form as either of the above two marriages could compete for it. However, since the William Coward and Margaret Marshall who were married in 1623 had a daughter called Em baptised on September 4th 1631, this Margaret Marshall could possibly have been assigned the baptism of Margaret, the daughter of Peter Marshall and Eme. This link, although possible, was tenuous, hence the baptism of Margaret Marshall in 1602 was not assigned to a family reconstitution form.

Unfortunately, these problems occured repeatedly within the March reconstitution due to the limited set of christian names. Consequently, while 304 heads of household were linked to their respective baptisms, only 39 female baptisms were assigned to a corresponding marriage. This linkage of female baptisms to a corresponding marriage is exceptionally low considering the custom of marrying within the bride's parish.

Whilst wills, probate inventories and administration bonds were useful in linking adult male deaths to the corresponding head of a family reconstitution form, the lack of documentation to make a link between the brides and their respective baptisms, as well as ambiguities resulting in links not being made or being made incorrectly, obviously affects the results discussed in this research.

However, it needs to be stressed that not all individuals in a community would be represented in a family reconstitution form, since different calculations impose different restrictions upon the number of observations taken into account. While the problems discussed above will have no effect upon the variables such as average family size, the frequency of families of different sizes, the percentage of pre-nuptial conceptions, the intergenesic interval, infant mortality and child mortality by sex, they would have a considerable effect upon the demographic variables of age at marriage and age-specific fertility.

Despite these problems, discovered in the latter stages of the compilation of the family reconstitution forms, the intrinsic value of a family reconstitution study of a community in a 'drowned' economy will become clear in the ensuing chapters.

Apart from the problems discussed above arising from matching individuals, non-conformity also needs to be considered as a source of under-registration.

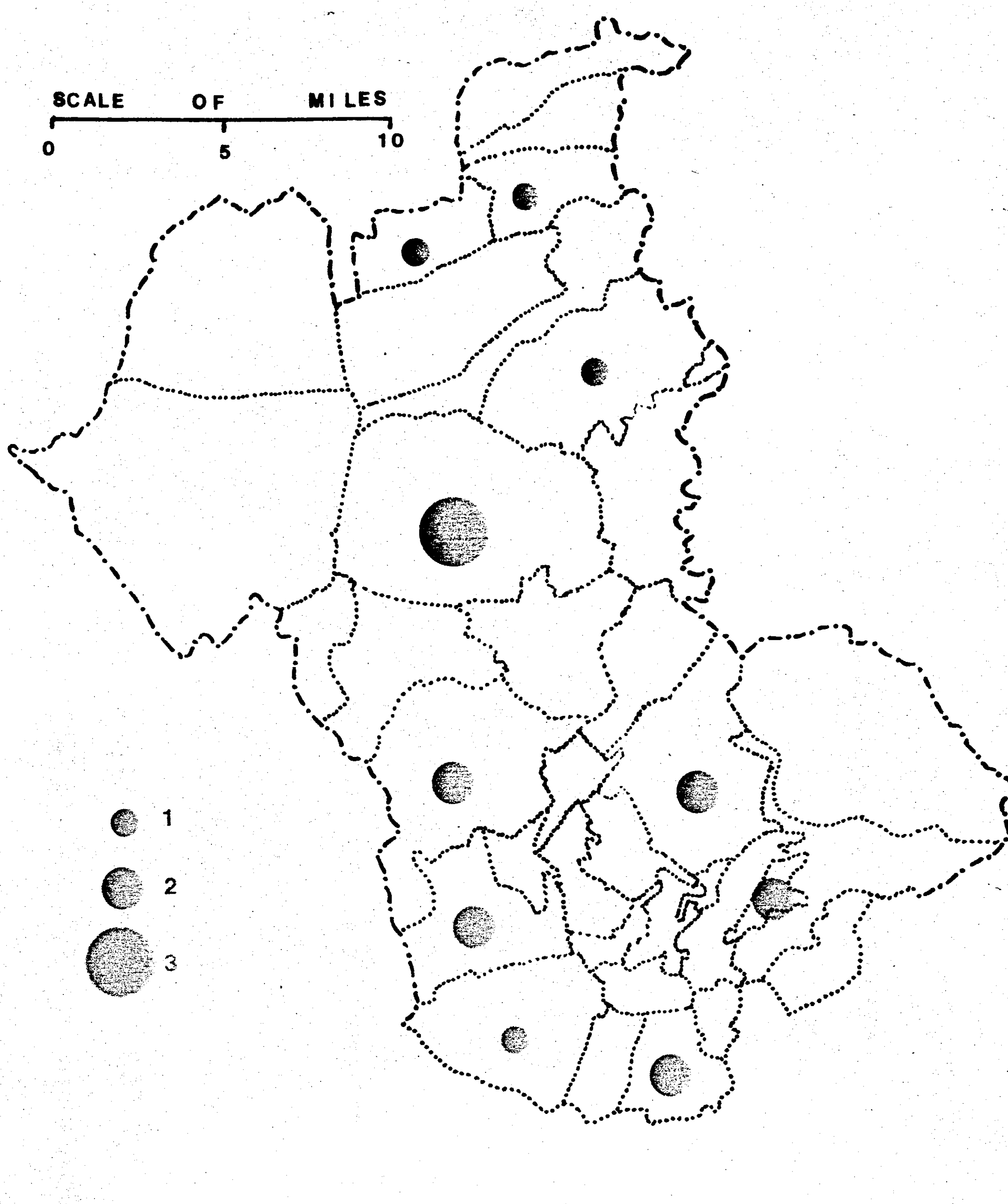
2.5 Nonconformity

Nonconformity has been widely discussed as a source of under registration in England, with the suggestion that the Established Church was used for baptisms, burials and marriages by Protestant dissenters until the eighteenth century.[61] The Isle of Ely is known to have abounded with Quakers, Baptists, Independents, and Congregationalists,[62] not to mention the lesser known sects of Culimites[63] and Family of Love.[64]

The sources available for a study of the extent to which nonconformity spread throughout the Isle of Ely, especially after the Commonwealth, are the returns made by Bishop Benjamin Laney in 1669,[65] the licenses issued after the Declaration of Indulgence in 1672,[66] the original returns of the Compton Census,[67] and the visitation returns of 1696,[68] and 1718.[69] Of these various sources, only the last provides an estimate of the strength of dissent within the individual sects.

The 1669 episcopal returns of dissenters made by the order of Archbishop Sheldan, show conventicles at Ely, Downham, Sutton, Whittlesea, Elm, Emneth and Haddenham. Three years later, during the period of Indulgence, licences were taken out for both meeting places and teachers within various areas of the Isle of Ely. (Figure 2.6)

Figure 2.6 Map showing the meeting places within the Isle of Ely.



Source: Lyon-Turner (1911) p862-875

Figure 2.6 indicates dissenters meeting places in the Isle of Ely after the declaration of Indulgence in 1672. Whilst three meeting places were in evidence in both market towns of Wisbech and March, five communities had two licensed meeting places with six settlements having only one licensed place.

Evidence from the original returns of the Compton Census indicates the widespread nature of nonconformity within the Isle of Ely. The figures for March suggest that it was an early centre of nonconformity with 139 dissenters and one papist. This proportion of around 14% was the highest in the Isle and was only surpassed by Barrington, Litlington, Oakington and Orwell in the county.[70]

However, from the evidence available within the earliest surviving Churchwardens accounts[71] names such as Le Pla, Behaggue, and Bautre seem to suggest the existence of the French or Walloon Protestant refugees, who had a meeting place at Thorney. Hence it may well be that some of the nonconformists evident in 1676 were of French origin and as such would have no immediate impact upon the quality of registration until the early eighteenth century, when the Walloon registers ceased at Thorney.

Although no evidence for any other Walloon chapels exist for the northern fenland area of the Isle of Ely there was 'a small unconsecrated Chappell of Ease built in ye time of ye Rebellion at Guyhorn',[72] a chapelry of Wisbech St Mary. This is possibly of French origin, especially as David Culy, the son of a Walloon Protestant, founded a sect holding extreme Anabaptist views there in 1695[73] However, at Culy's death in 1725, the sects adherents rapidly decreased.[74]

The Quakers were in evidence in the Isle by 1654, with eight and fifty-one being recorded in Wisbech and Ely Gaol respectively, between 1654-1668. However, the only consistent record of Quakers in the Isle are for the years 1696-1714, when the incumbent of Chatteris recorded their vital events for those living in his cure in the back of the parish register.[75]

The review of nonconformity undertaken by the Presbyterians and Independents in 1690-1692[76] reports congregations meeting at March, Stretham, Ely and Wisbech, but in each case ‘noe minister’.[77] Baptist meetings were in a similar plight by the late seventeenth century with the organised Baptist communities in March, Whittlesea and Wisbech declining in numbers. While Wisbech had less than 100 adherents in 1715 being led by the particular Baptist, William Rix, March and Whittlesea had joint meetings under the leadership of Thomas Speechley with a membership totalling 160.[78] However, by 1776, both of these had gone into decline, with Wisbech having only 20 adherents by 1782.[79]

It is evident, even from these scanty sources, that the degree of nonconformity within the Isle of Ely varied both temporally and spatially. Whilst the quality of the registration and the ensuing aggregative analysis suggested that March was suitable for a reconstitution, the degree of nonconformity meant that March was pushing the acceptable limits for a family reconstitution. The extent to which the spread of nonconformity may have affected the registration of the vital events within March and as a result the representativeness of the family reconstitution, will now be discussed.

2.6 Representativeness of the family reconstitution

Once the family units were reconstituted the question that then arose was that regarding the representativeness of the results obtained. Whereas nearly all children are involved in the calculation of infant mortality, the conditions that relate to age-specific fertility are so stringent that only a very small number of families can ever be considered.

However, even without considering the effects of lax registration or nonconformity, not all the individuals living in March would be represented in a family reconstitution. Reasons of convenience, or religious principle, could lead to events being registered elsewhere than the parish in which they had taken place. Moreover, not all adults marry, and hence fail to head a family reconstitution form. Short term transients would go unobserved during their residence unless a survey or listing of the inhabitants was made.[80] Furthermore, servants are never represented in March[81] while widows and widowers who moved into the parish without remarrying are unlikely to appear. Even for those who returned to their native parish after long term migration, the nominal link between their baptism and their death was unable to be made without other observations and of course, for women, especially widows, it would be difficult to trace their maiden name.

The effects of nonconformity upon a family reconstitution study is very similar to that of migration, in that both of these events will lead to a family group passing out of observation. However, the calculation of demographic rates from the reconstituted families is so carefully defined that family groups moving out of observation do not necessarily lead to bias. Bias would only occur if the under-registration occurred in only one class of event. With nonconformist families it was usual for marriages to be solemnised in the parish church, although the baptism of their offspring was rarely recorded in the parish registers, while the degree to which they were entered in the burial register was usually dependant upon whether their own chapel had its own burial ground.

As regards family reconstitution studies, the dangerous subgroups were those nonconformists who had cause to be entered in the parish records, thereby giving the impression of continued acceptance of the Anglican rites of the established Church. However, it has been suggested that this problem is minimal with ‘religious migrants’ for very few nonconformists returned to the Anglican fold.[82]

On the occasions that nonconformists returned to the established Church they were often noted in the parish registers, such as the Quaker and two Anabaptists, one aged thirty, who were baptised into the Anglican Church in the late seventeenth century.[83] There were also occasions when whole families were baptised shortly after the death of a spouse. Moreover, in the cases where nonconformist families returned to the Anglican fold, their vital registration events were often too few to be useful for the purposes of family reconstitution. Occasionally either nonconformist registers survive to complete the gaps or else their vital events were entered at the back of the parish register as in the case of Chatteris, where the local minister recorded all the Quaker births and burials from 1696-1714.

Two listings of a part of the population of March were used against which to compare the representativeness of the family reconstitution. These sources were the 1669 listing of all those holding common rights within March,[84] and the 1674 hearth tax returns.[85] The listing of 1669 identified 168 holders of common rights within March, while the 1674 Hearth Tax return had a total of 334 entries, of which 256 were charged, 66 exempt and 12 empty. Of these two listings, 147 (89%) of the 1669 holders of common rights and 191 (59%) of the householders in the 1674 hearth tax headed a family reconstitution form.

The discrepancy between the number of individuals assigned to the family reconstitution in the two listings could be due to a number of reasons. The individuals in each listing were only checked against those individuals heading a family reconstitution form. Hence any unmarried adults would automatically be excluded as would any couples arriving in the parish after marriage unless they had cause to be entered in the parish registers through the birth, baptism or death of their offspring. Furthermore, couples who were barren or had their children baptised in another parish, or through religious convictions preferred not to use the rites of the established church would fail to be included in the family reconstitution.

2.7 Conclusion

Questions about the representativeness of any results obtained in a family reconstitution study concern the identity of the reconstituted population since under-registration, especially if concentrated in one class of event, would produce severely distorted results. Family reconstitution techniques have often been criticsed as being unrepresentative, since migration, even temporary or local, can take families out of the range of the reconstitution study. However, family reconstitution studies by their very nature, only cover those married couples and their offspring resident within a parish, who follow the rites of the established Church, while unrepresentativeness can also derive from the omission of unmarried adults, who in themselves, are a significant proportion of the population.

No parish is a closed community, hence it would be impossible to properly reconstitute all the families within a community. The widespread physical mobility that characterised England in the early modern period means that those found resident in one place may often have been born elsewhere and eventually die in another place. Even if a particular individual was born and eventually died in the parish, this is no way indicative that the intervening years were spent there.

Despite the problems and limitations evident in the parochial registration system, they do provide the best data source available for demographic work prior to the beginning of civil registration. In addition the occupational material within the registration system can be used as an aid in the reconstitution process.

References

1. Macfarlane (1977A) and Macfarlane (1977B).

2. Fleury and Henry (1965)

3. One such detailed register can be seen at Thorney, where the French Protestants had a chapel. Unfortunately, only the baptismal register is now in existence.

4. Civil registration began in 1.7.1837 with the Act of 6 & 7 William iv c.86

5. See Wrigley (1966)

6. See for example Krause (1965); Wrigley and Schofield (1981); Hollingsworth (1976); Levine, (1976); Drake (1974) D301 Unit 4 and Schofield (1972).

7. There are at present 35 family reconstitutions at the Cambridge Group for the History of Population and Social Structure, of which the first, Colyton, was completed in 1964-1965.

8. Wrigley (1966) p111

9. The Cambridge Group have recently completed their first computerised family reconstitution study of thirteen Oxfordshire parishes and are in the process of completing one on the London suburban parish of Clerkenwell. For literature on computerised family reconstitutions see Schofield (1983) and Akermann, Johansson & Kuslin (1978).

10. For a list of the Bishops' Transcripts for the Diocese of Ely see Owen (1971) pp46-53

11. This is the level of literacy as regards the ability to sign the marriage register.

12. The range of demographic variables which can be calculated from a family reconstitution are illustrated in Wilson, thesis (1983) and Souden, thesis (1981). Also see Wrigley and Schofield (1983) and Wrigley and Schofield (1981) pp96-159

13. See Souden, thesis (1981)

14. An example of mobility in the seventeenth century can be seen in Bishop LLoyd's survey during 1693-1698 of the parish of Eccleshall in Staffordshire. Richard Wood, a dyer, had recently married and settled down within the parish having been born sixteen miles away in Stoke-in-Trent. Before marrying he had spent six months at the beginning of his career in Newport, Shropshire, followed by a year in Eccleshall before returning to Shropshire where he spent a further two years at Aston. He then moved back to Bucknall, in Stoke-on-Trent before finally moving back to Eccleshall where he married and settled down. Without the Bishops notes, one would have realised little of Richards short-term mobility. Five other examples are also in evidence within this late seventeenth century survey.

15. FRFs 623, 659, 1658

16. See Appendix 2.2 for FRF 623

17. More exceptional though, was the wife of Reverend Snell of Doddington who travelled back to Hertfordshire to have each of her children. While these events would normally go unregistered in the brides's resident parish the Reverend Snell makes a note of the death of each of his children shortly after birth in Hertfordshire as well as Mrs Snell's death in childbirth in the early eighteenth century.

18. Entries in many parish registers of the Isle of Ely from 1640 onwards refer to 'A Yorkshire man', 'A man from Ireland', or a 'Scotch man'. Furthermore, some entries in the Ely, Wisbech and March registers refer to unknown

individuals dying such as ‘a child found frozen on the road’, ‘a child found drowned in the river’ etc, while small groups of names appear in the Ely and Wisbech registers relating to prisoners dying in prison or through being executed.

19. Such as wills, probate inventories, administration bonds and churchwardens accounts.

20. See for example Krause (1965); Levine (1976) and Schofield (1972).

21. Burn (1824) p17

22. See McLaren (1974)

23. 7 & 8 Wm III c35

24. 4 Anne c12

25. 26 Geo II c53

26. 52 Geo III c146

27. Cox (1910) p92

28. Wrigley and Schofield (1981)

29. Burn (1824) p144

30. 18 & 19 Ch II c4 re-issued Ch II c3 and 32 Ch II c1. Also see Snell (1985) for a discussion of the possible disruption to burial records from the return of corpses to parishes of settlement for burial.

31. See Wrigley (1968) and Wrigley and Schofield (1981).

32. Cox (1910) p82

33. Cox (1910) p83

34. Burn (1824) p31

35. See Krause (1965) pp379-394 especially p382

36. 25 Geo III c75

37. For an irate outburst from a conscientious vicar, see Appendix 2.3.

38. CRO P/116/1/1 - P/116/1/3

39. Martin Coward was paid 10s for writing up the register

40. CRO P/116/1/3

41. CRO P/116/1/3

42. CRO P/116/1/3

43. All dates have been converted from the Julian to the Gregorian calendar.

44. Wrigley (1966)

45. See Appendix 1.3 for a map of the Isle parishes with their hamlets and chapelries.

46. Owen (1971) pp46-53

47. FRFs 5000-5064

48. See FRF 5018

49. Drake (1974) D301 Unit 4

50. Wrigley (1966)

51. UL HK 2799 - HK 2808

52. It is far easier to link children with their respective parents than to link a child's baptism to its marriage, an event occuring at least 20 years later.

53. See FRF 399

54. See FRF 406

55. See FRF 176

56. See FRF 246

57. See FRF 246

58. See FRF 533

59. See FRF 551

60. See FRF 337

61. Krause (1965) pp379-394

62. Lyon-Turner (1911) Vol 1 pp34-35

63. See for example Bevis (1983) and Bevis (1962).

64. See for example Heal (1972) and Heal, thesis, (1972).

65. Lyon-Turner (1911-1914)

66. Lyon-Turner (1911-1914)

67. EDR B/8/1 These were compared to the 'Compton Census' in the William Salt Library, Stafford, (Salt MSS 33)

68. EDR B/2/68 f12-end and B/2/70 f1-51

69. EDR A/6/3 f10v^{o} - 82v^{o}

70. EDR A/6/3 f10v^{o} - 82v^{o}

71. CRO P/116/28/20

72. H.O. 129/7/93

73. Bevis (1983); Heal (1972) and Heal, thesis (1972)

74. Gardner (1851) p607. From the 700-800 members in 1725 membership had dropped to around 15 families by the mid-eighteenth century.

75. CRO; Chatteris parish registers

76. Gordon (1917) pp16-17

77. Gordon (1917) p18

78. Evans MSS f 9b (Dr. Williams Library)

79. Wilson MSS I 5, f 283-286

80. See for example the seventeenth century survey of the Bishop of Eccleshall referred to in footnote 14.

81. Only one entry in the parochial registers for March refers to a servant, and then not by name but by occupation and his master's name.

82. Wrigley and Schofield (1981)

83. CRO P/116/1/3

84. PRO E78/1415

85. PRO E179/244/23

Chapter 3

The Demographic Background

'It is said that the foolish curiosity of Elagabalus attempted to discover from the quantity of spiders' webs the number of inhabitants of Rome'[1]

3.1 Introduction

One of the first tasks of any study with a demographic element must be to establish the size of the population of that particular area at as many different points in time as possible. This type of information is required in order to calculate population distribution and density as well as being necessary to appreciate the effects of population pressure on the local economy and society.

Since the interpretation of population change is both a complicated and controversial subject with the principal difficulties stemming from the uncertainties surrounding the available data sources and the ways in which these sources are used to estimate population change, a review of these sources, and my interpretation of them is given in Appendix 3.1.

Although accurate population estimates are an impossiblity the aim of the analysis is to present an outline of the population changes within the Isle of Ely with particular emphasis on March. The initial examination takes static time periods at varying intervals dependent upon the available sources. These are then discussed in a style more akin to the 'political demography' reminiscent of Gregory King's day, than the aggregative style of the present. A chronology of change, built up by linking these separate periods, is then used as the basic framework around which the demographic material collated from the parochial registration system is fitted.

As an appreciation of the Isle of Ely's population change needs to be considered in as wide a historical perspective as possible, it was felt necessary to extend the analysis to the early nineteenth century even though the main body of the study ends in the mid-eighteenth century. Furthermore, in order to determine the extent and direction in which the population levels within the Isle of Ely were moving at the onset of the sixteenth century, it was felt advisable to take a cursory look at the population changes prior to this date. Consequently, this chapter compares the population growth rate of the mid-sixteenth century to the early nineteenth century with the national sample of the 404 parishes used by Wrigley and Schofield. It then briefly discusses the period up to the mid-sixteenth century, concentrates in detail on the next two hundred years before outlining the further changes evident before the mid-nineteenth century. It also attempts to analyse the question of whether there was any pattern of significance underlying the complexities of the expansion and contraction of the the population. The evidence for growth is discussed, cases of expansion and decay are contrasted, and some of the general factors affecting this pattern are considered.

3.2 Data Sources

In the late fourteenth century England experienced a calamitious demographic collapse for which repeated visitations of the plague seem to be only partially responsible. By the early fifteenth century the population had been reduced to the level of 1086. By the sixteenth century, the population of England had not yet fully recovered to the level of the early fourteenth century, while the economy was possibly just beginning to recover after the nadir of the fifteenth century.

Against this background, the problems inherent in mapping population changes for pre-industrial England posed interpretative problems since details regarding population totals have to be gleaned from data whose prime purpose was to provide the government or ecclesiastical authorities with the information they desired.

Prior to the early nineteenth century there is little direct information on the distribution of population within England, since few local or regional censuses were taken, while the only national survey was that instigated by the Normans in 1086. However, by the sixteenth century, records giving indirect, and occasionally direct information on population were becoming more plentiful and detailed, especially with the advent of parochial registration in 1538.

The government fiscal listings include the thirteenth[2] and early fourteenth century poll taxes,[3] the lay subsidy returns of 1524/5[4] as well as those of 1544/5,[5] the Hearth Tax Returns of 1662-1688,[6] the poll taxes taken in the later seventeenth century, and the tax on births, deaths, marriages and bachelors of 1695. The 1524/5 lay subsidy returns can also be reinforced by the Musters of Harness, where they exist.[7] In the religious group, are the surveys of 1563,[8] the Communicant Returns of 1603,[9] 1688 and 1690,[10] and the 'Compton Census' of 1676,[11] while visitations[12] or local surveys taken at the request of the Bishop or local clergy are also in evidence for some areas.[13] There are also those national listings which do not fit neatly into either of these categories such as the Protestation Returns of 1641,[14] and the Association Oath rolls of 1695.[15]

Of this variety of fiscal and ecclesiastical sources not all survive, or survive in sufficient detail to be used for March in particular or the Isle of Ely in general.

The fiscal and ecclesiastical returns mentioned above were not instigated as a databank for twentieth century demographic statistics. Consequently, they must be used carefully in any form of social or economic study, for as Elton has noted 'studies demanding systematic records are usually handicapped, either by loss of evidence or, more seriously, by the fact that the ages in question were not interested in the statistics which the modern historian wishes to extract'.[16]

The fiscal listings represent that section of the population who were taxpayers and consequently provides information regarding those who were usually adult,[17] and invariably male, while the ecclesiastical listings supply information on the number of communicants, families or households, usually ignoring children under the age of 15,[18] dissenters and recusants.

Since few of these sources are directly comparable with each other, multipliers are often used to convert them into population totals.[19] The use of a multiplier, however, requires certain assumptions to be made about the spatial coverage of the various sources, such as the the level of under-enumeration, the sex ratio in the case where sources list males only and the age structure of the population whenever coverage is confined to a particular age range, or group of age ranges. Any calculation of the total population from the number of communicants requires assumptions to be made about the age at first communion, Furthermore, using sources that provide information about the number of families, households or houseful s[20] is strewn with difficulties. For not only did household size vary considerably between urban and rural areas,[21] but from the definitive work of Wall and Laslett it is evident that 'nothing like a definition of the family or household has survived'.[22]

Given these drawbacks, multiplying any source by a pre-determined constant factor in order to obtain a population estimate poses interpretative problems since it introduces an extra margin of error into the calculation. Since the majority of sources used in this study are based on households, multipliers have been omitted in favour of the actual data. This data source, though probably not accurate should reflect the general order of magnitude of the population dynamics of fenland Cambridgeshire.

3.3 Population growth 1676-1801

As it is perhaps tempting, but definitely misleading, to look at the population changes in one archetypal community or area, March and the Isle of Ely will be initially viewed against the backcloth of the national sample of the 404 parishes.[23] From this starting point, the population dynamics of the Isle of Ely will then be discussed more fully.

In order to make any comparison with the definitive work by Wrigley and Schofield, relatively accurate estimates of the total population of the Isle of Ely are required. Furthermore, this data is required at two points in time, preferably as far apart as possible.

For the end of the time period, the census of 1801 was used, however, finding a date for an earlier period was more problematic, since all sources pose problems of interpretation.[24] One ecclesiastical survey, taken at the behest of the Archbishop, is at present the subject of a critical evaluation by Dr Anne Whiteman.[25] This survey, covering the majority of the parishes in the Province of Canterbury, in theory gave the number of persons over the age of 16 with their religious convictions. However, many incumbents either misunderstood their instructions, or else the instructions given to them differed from those sent out centrally, for incumbents either returned the number of adult males, the number of householders, the total number of adults, or the total number of inhabitants. Often whole areas would follow a similar format, which is indicative of local versions of the general instructions departing from the standard format.

Fortunately, the original returns of the ‘Compton Census’ for Cambridgeshire still exist amongst the Ely Diocesan

Records[26] and from these it is apparent that all the incumbents within the Isle of Ely, with the exception of the incumbent of Chatteris,[27] returned the total number of inhabitants, the number of nonconformists, and the number of recusants. On occasions, some returns related to chapelries, as in the case of the returns for Doddington. This is fortunate in that the returns for March are separate from those for Doddington cum Benwick and Wimblington.

Using the figures from the Compton Census and the 1801 census,[28] the ratio between the two population figures was calculated. Table 3.1 shows the range of the resulting growth rate.

Table 3.1 Population growth rates between 1676 and 1801

Parish	Population in 1801	Population in 1676	Ratio 1801/1676
Wentworth	115	78	1.47
Witchford	204	167	1.22
Mepal	266	166	2.29
Newton	283	150	1.89
Wilburton	301	228	1.32
Witcham	323	198	1.63
Tydd St Giles	535	169	3.16
Coveney	712	263	2.71
Stretham	755	428	1.76
Wisbech St. Mary	831	284	2.93
Downham	844	412	2.05
Sutton	944	490	1.92
Elm	951	414	2.30
Leverington	1047	416	2.52
Haddenham	1090	700	1.56
Doddington	1277	813	1.57
Littleport	1602	556	2.88
Chatteris+	2393	1220	1.96
March	2514	949	2.65
Ely Trinity	2721	1686	1.60
Whittlesey	3841	2021	1.90
Wisbech St Peter	4710	1424	3.30

Sources: 1676 figures are taken from EDR B/8/1
1801 figures are taken from the census returns

Notes: Outwell, Upwell, Welney and Thorney are not included as no figures for 1676 are available.

+A multiplier of 4.5 was used for Chatteris for 1676 the number given in the Compton Census was 271

From Table 3.1 it is evident that there were wide variations within the resultant growth rates of the fenland parishes, from 3.30 at one extreme to 1.22 at the other. The growth rates were particularly marked in those settlements on the silt fen. Wisbech St Peter and Tydd St Giles experienced the highest growth rates, with a population increase of more than a factor of three between 1676 and 1801, while Wisbech St Mary, another silt fen community, came close to trebling its population over the same period. March, with a growth rate of 265 percent, was surpassed by the three silt fen communities mentioned above, as well as the peat fen parishes of Littleport and Coveney. The population increase of Coveney is particularly interesting as the parishes around it had some of the lowest growth rates in fenland Cambridgeshire. One further remarkable feature is the wide variation in the growth rates of the three market towns of the Isle of Ely with Wisbech St Peter, March and Ely experiencing population increases of 330 percent, 265 percent and 60 percent respectively. These differences are especially interesting and will be discussed in detail in the ensuing sections.

With such wide ranging differences in the population growth rates, their reliability is open to question. Consequently, the population totals for 1676 and 1801 were subjected to a rank correlation. The Pearson production-moment coefficient of correlation at +0.97 indicates a near perfect correlation between the two sets of data,[29] Hence, in general, the large parishes of 1676 remained so in 1801 and vice versa.

Naturally there are variations evident between the parishes, so in order to bring out any underlying pattern, the parishes were grouped into four categories dependant upon their total population in 1801. (Table 3.2)

Table 3.2 Population growth by parish sizes

Grouping	Parishes		Ratio
	No	%	1801/1676
000-549	7	30.4	1.9
550-999	6	26.1	2.3
1000-1499	4	17.4	1.9
1500+	6	26.1	2.3
All	23	100.0	2.1

Source: Table 3.1

Notes: Outwell, Upwell and Welney and Thorney are not included in the various groupings since no data were available for 1676.

Considering the risks of random variation due to the small sample size, the overall growth rate of 2.1 for the Isle of Ely settlements is comparable to the overall growth rate of 2.28 for the 404 parishes in the national sample.[30] However, population growth rates over a period of 125 years can only give a cursory measure of the Isle of Ely's general demographic experience. What is required is a more detailed view of the population changes in the Isle of Ely in the pre-industrial period.

While the fiscal and ecclesiastical sources, collated for purposes other than demographic statistics, permit only a crude estimation of growth, they are of great use in establishing the broad pattern of change in the population dynamics of the Isle of Ely at various points in time.

3.4 Population Distribution and Density 673-1524

The first population estimate for Fenland Cambridgeshire dates from the seventh century, when Bede noted that there were 600 families living in the Isle of Ely.[31] If this estimate is relatively accurate then the population levels more or less halved between the seventh century and Domesday, as there were only 323 tenants and 90 slaves in evidence in 1086.[32] (Table 3.3)

The Domesday Survey of the Isle of Ely shows a remarkable reflection of the variations in the landscape with few vills in the north of fenland Cambridgeshire. The survey of 1251[33] indicates new settlements on the silt fen at places such as Leverington and Tydd St Giles.[34]

Table 3.3 Population totals from existing documentary sources for the Isle of Ely before the early sixteenth century.

Parish	1086	1251	1377	Ratio 1251/1086	Ratio 1377/1086
Chatteris	25 (2)	65	456	2.6	18.2
Coveney			73		
Doddington	40 (1)		758		18.9
March	12	103		8.6	
Downham	23 (8)	74		3.2	
Elm		130			
Ely	68 (20)	345		5.1	
Haddenham	18	173	353	9.6	5.9
Hill Row	14 (5)				
Leverington		77			
Linden	26 (10)				
Littleport	23 (8)	108		4.7	
Stretham	33 (2)		220		6.8
Sutton	32 (7)				
Tydd St Giles		94			
Wentworth	38				
Whittlesey	32 (1)		660		20.6
Wilburton	20 (8)	41	85	2.1	4.3
Wisbech	45 (2)	128		2.8	
Witcham	20 (5)		138		6.9
Witchford	29 (8)		170		5.9

Source: Domesday for 1086, B.M. Add MS 6165 for 1251, and Palmer (1912) for the 1377 Subsidy Roll

Notes: The figures in brackets refer to the number of slaves in each vill.
The Domesday figure for Wisbech includes eight fishermen.
The figure for Doddington in 1377 includes its chapelry and hamlets.

In England as a whole, the population levels between Domesday and the mid-thirteenth century expanded by approximately 250 percent.[35] However, the existing documentation for the Isle of Ely is suggestive of the fenland Cambridgeshire parishes expanding far more rapidly than this. While Wilburton, Chatteris and Wisbech more than doubled in size between 1086 and 1251, this rate was not typical of Fenland Cambridgeshire as a whole. Downham experienced a threefold increase though this was far exceeded by March, where 103 tenants were cultivating an area occupied by 12 villeins at Domesday. This eight fold increase at March was similar to that experienced at Haddenham, where there was a ninefold increase in the number of mouths to feed between Domesday and the mid-thirteenth century.

These rates of expansion are in direct contrast to the upland of the county of Cambridgeshire where population levels barely doubled in the majority of settlements between Domesday and the mid-thirteenth century, although exceptions of a fourfold increase were in evidence for Orwell and Chippenham.[36]

While a further estimation of the medieval population of the Isle of Ely can be gleaned from the subsidy rolls of 1377, this fiscal source only exists for the Witchford hundred. Consequently, other sources that provide some approximation of the population levels at this period are required. One such source is the 1334 lay subsidy, which has been the subject of a critical evaluation by Glasscock.

Although it is impossible to establish the relationship between the taxable capacity of an area and its population,[37] the tax paid by the Isle of Ely hundreds in the early fourteenth century, even after floods,[38] is suggestive of a large number of people being taxable in the Isle settlements.[39] (Table 3.4)

Table 3.4. Rank order of the Cambridgeshire hundreds by the amount of tax paid in 1334.

Hundred	Amount	Rank Order
Wisbech	87.12.0	1
Armingford	86.11.0	2
Longstow	82.13.0	3
Wetherley	77. 2.0	4
Papworth	71. 6.0	5
Thriplow	61. 5.0	6
Northstow	59. 6.0	7
Chilford	55.17.0	8
Witchford	54.19.6	9
Flendish	50.15.0	10
Staploe	48.19.01/2	11
Staine	41.14.0	12
Whittlesford	37. 1.0	13
Chesterton	35.12.0	14
Radfield	34. 5.4	15
Ely	29. 7.93/4	16
Cheveley	21. 5.4	17

Source: E179/81/11

From the rank order of Cambridgeshire hundreds by the amount of tax paid it is evident that the Wisbech hundred, lying on the silt fen, has a higher assessment than any other hundred in the county of Cambridgeshire, while Witchford hundred comes precisely half way down the ranking order. The position of Ely very near the bottom of the rank order is probably due to the nature of the subsidy. The 1334 subsidy, being a lay subsidy, ignored all clerical wealth, an important aspect of Ely. The Diocese of Ely, though small, was only surpassed in the valor of 1535 by Canterbury, Winchester and Durham. So although all hundreds would have had higher assessment values had the clerical wealth been assessed alongside the lay wealth, Ely, being the ecclesiastical seat, would probably have been ranked even higher,[40] especially as the Abbey and Bishopric of Ely had a virtual monopoly of ownership within the Isle of Ely. This monoploy and the ensuing liberties enjoyed by the Bishop's even resisted Thomas Cromwell's determination for the dissolution of all franchises and liberties within the realm.[41]

Furthermore, from Sheail's work on the 1524/5 lay subsidy some striking features emerged when looking at the rank order of the hundreds of fenland Cambridgeshire.(Table 3.5)

Table 3.5 Rank order of the hundreds based on the assessment of the 1524/5 lay subsidy roll.

Hundred	Assessment	Rank Order	% of change 1334-1524/5
Witchford	130.5.10	1	+136.97
Wisbech	105.13. 5	2	+20.60
Ely	97. 0. 9	3	+230.18
City of Cambridge	84. 4. 8	4	
Armingford	83. 4.11	5	-3.82
Staploe	76. 9. 2	6	+56.19
Longstowe	53. 2. 8	7	-35.71
Whittlesford	49.18. 6	8	+34.75
Staine	48.11. 6	9	-16.49
Chilford	44. 7. 6	10	-20.55
Papworth	42.11. 5	11	-40.29
Chesterton	42. 2. 2	12	+18.28
Wetherley	40. 2.11	13	-47.93
Thriplow	38. 3. 3	14	-37.69
Northstow	36.16. 4	15	-37.92
Radfield	32. 1. 2	16	-7.66
Flendish	27.14. 4	17	-45.39
Cheveley	21. 9. 3	18	+0.92

Source: Sheail (1968) pp154-161

Notes: The city of Cambridge was listed separately in the 1524/5 lay subsidy rolls.

Although it is impossible to establish the relationship between the taxable capacity of an area and the size of its population, the lay subsidy of 1524/5, set against that of 1334, is indicative of a dramatic increase in the taxable capacity of the peat fenland during the period 1334-1524/5 and as such is suggestive of a substantial rise in the population in these settlements over the corresponding period.

By 1524/5 the Isle of Ely hundreds were the three highest ranked. Not only did the total tax collected in the Isle of Ely hundreds rise but the considerable rise of twenty-one percent on the silt fen, was far outstripped by the dramatic increase in the hundreds lying on the peat fen. While the Witchford hundred had an increase of 137 percent in the total tax collected, the Ely hundred surpassed this with an increase of over 230 percent. This is in stark contrast to the county of Cambridgeshire where the total tax collected between 1334 and 1524/5 actually fell in ten of the fourteen hundreds.

In the early sixteenth century the settlements on the silt fen had between 61 and 164 taxable persons, while those on the peat fen had between fourteen and 404 taxable persons.[42] However, the large size of their parishes meant that their densities were generally low. In general, exceptionally low densities were to be found in the deep peat fen where there were between two and six taxpayers per thousand acres. The more densely settled parishes along the River Ouse, in the south of the Isle of Ely, had between sixteen and twenty-three taxpayers per thousand acres, which was comparable to the densities for lowland England as a whole.[43] The population density of the silt fen was slightly below this at ten to twenty-one taxpayers per thousand acres.

This is in contrast to the upland part of the county of Cambridgeshire where the small size of their parishes meant that their densities were generally high and amongst the highest in the country as a whole.[44] A handful even had over 55 persons assessed per thousand acres, while those areas of low density by Cambridgeshire standards, 'were of normal or above normal density for lowland England as a whole'.[45]

In both of these major studies by Glasscock and Sheail the density values of the taxable wealth in the Isle of Ely hundreds were the lowest in the county of Cambridgeshire as a whole.[46] A point succintly expressed by Glasscock when he stated that 'the position of Cambridgeshire on the [national] list represents a median between the extremes of its various parts, for the valuation of the moveable goods on the upland of the county would be right at the top, whereas that on the peat fen would be right at the bottom'.[47]

The Witchford hundred, ranked first, with £47 more collected in tax, as well as having some 649 more taxpayers than the highest ranked county hundred, had a lower density value than all but two of the fourteen upland county hundreds. So why this discrepancy?

The density maps of Glasscock and Sheail were calculated by dividing the tax payable by the area of the community concerned, but such an approach is simplistic in the extreme when considering the Isle of Ely. The 1334 density of wealth was nine shillings per square mile over the whole of the Isle of Ely, compared to quotas of up to fifty shillings per square mile in the upland of the county of Cambridgeshire.[48] Furthermore, the 1524/5 quotas were under nineteen shillings per square mile for the Isle of Ely, yet over fifty shillings per square mile for parts of the upland county of Cambridgeshire.[49]

Density maps, however, shown in the form of choropleth maps have two major weaknesses when used in an historical context. Firstly, an entirely satisfactory mapping base for pre-industrial England does not exist since parish extents depended largely upon ancient custom rather than parliamentary sanction, and as such were ill-defined.[50] Secondly, all choropleth mappings show a uniform distribution within any area and consequently takes little notice of any variations within the parish or settlement concerned. In the case of Fenland Cambridgeshire parishes, this second weakness has lead to information regarding pre-industrial population density levels being presented in a misleading fashion, which in turn, has given the Isle of Ely an unimportance that it failed to warrant and one that was, to some extent, divorced from reality.

Calculating density values for the Isle of Ely by using the simple acreages of the settlements concerned is subject to local distortion since these calculations fail to reflect the amount of common fen within each parish. For example, Marshall stated that although the late eighteenth century parish of Littleport extended to some 17,000 acres, 16,000 of these were pure fen.[51] Even as late as 1821, two hundred years after the beginning of the great fen drainage schemes of Vermuyden, the number of people actually living in the fens in March contrasted sharply to those living within the rest of the parish.[52] (Table 3.6)

Table 3.6 The population of March in 1821

Area	Inhabited houses	Unoccupied Houses
North side of the River	321	3
South side of the River	463	13
Fen	86	3
Total	870	19

Source: P/116/1/5
Extracts made by John Graham, M.A. Curate in 1821

Consequently, mappings showing density values of the population within the Isle of Ely need to be constructed from figures in which the acreage of the parishes excludes the fen. This, however, is problematic, for sources surveying the fen, prior to the twentieth century, are minimal. However, one such survey was that taken for the Eau Brink Tax.[53] This fiscal survey was a tax levied on each parish in proportion to the amount of fen which had been drained within each parish. The figures given in this survey were then subtracted from the acreage of each parish, as at 1831, in order to show the acreage of land which was higher ground and not frequently inundated by either fresh or salt water prior to Vermuyden's drainage schemes.

These figures, although probably not always accurate, are more likely to show a realistic picture of the population distribution and dynamics within the Isle of Ely than that used by either Glasscock, Sheail or Smith.[54]

Table 3.7 Eau Brink Tax

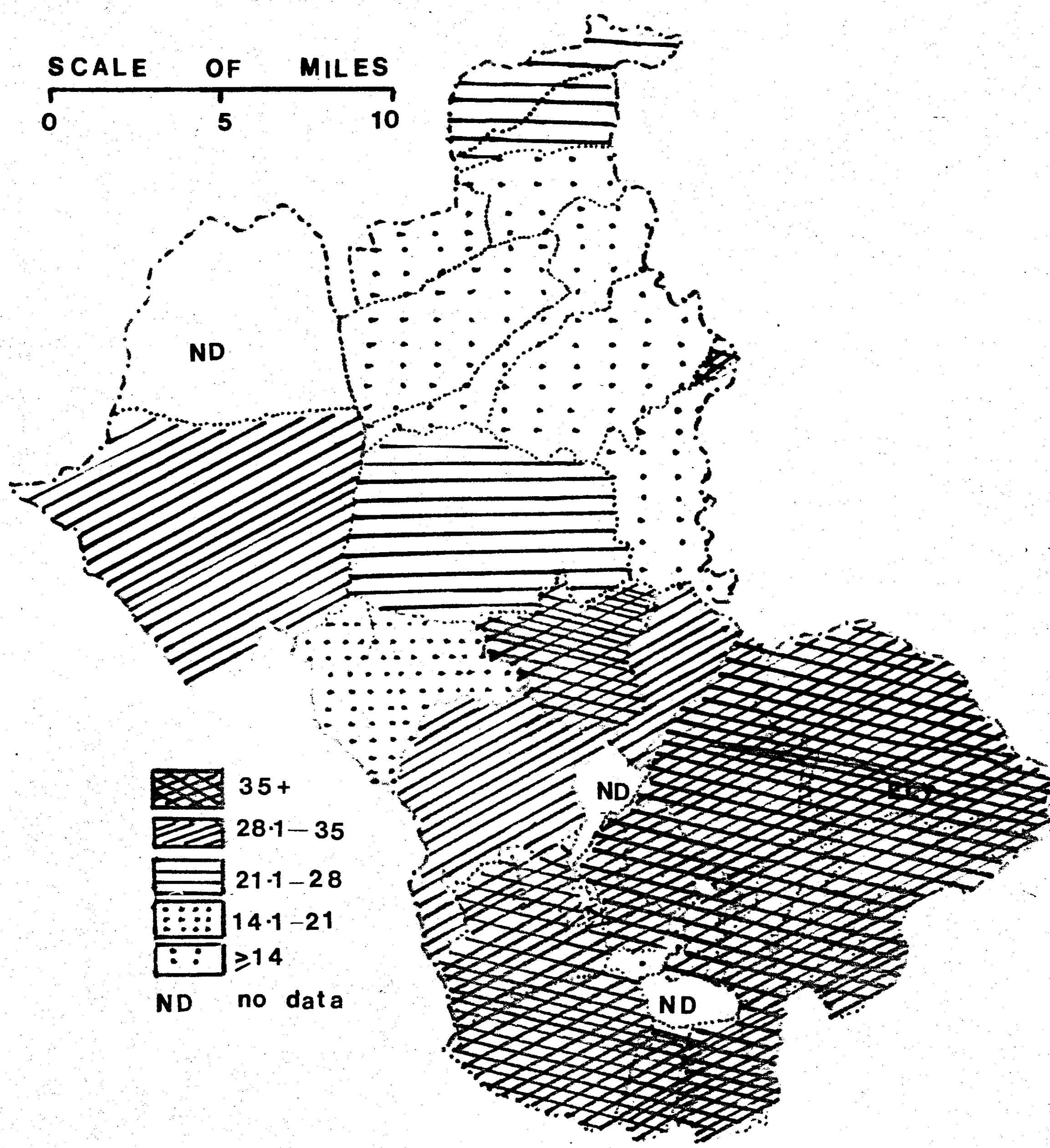
Parish	1 Taxable land A. R. P.	2 Acreage in 1831	3 Difference 1831-1821	Land able to be settled %
Benwick	3008. 0.35	3060	52	2
Coveney	2338. 0.19	2560	222	9
Chatteris	10411. 0.20	15090	4679	31
Downham	8593. 2.17	10550	1957	19
Doddington	11900. 0. 3	14740	2841	19
Elm	3976. 3. 8	11230	7254	65
Ely	9209. 1. 5	17480	8181	46
Haddenham	5357. 0.16	9530	4173	44
Littleport	14591. 0.34	16390	1799	11
Manea	4410. 3. 4	5860	1450	25
March	16072. 1.16	20440	4368	23
Mepal	1108. 3. 7	1440	332	23
Outwell	2358. 0. 9	3180	822	65
Stretham	2334. 2.10	5310	2976	56
Sutton	5436. 2.16	7850	2414	31
Welney	5175. 0.15	3180	2830	89
Witchford	1250. 2.10	2580	1330	52
Witcham	694. 3.15	2800	2106	75
Wentworth	357. 0.20	1520	1163	77
Wilburton	1417. 3.17	2610	1193	46
Whittlesey	15052. 0.38	25430	10378	41
Wisbech	797. 3.27	16250	15453	95
Thetford	765. 3.32	1630	865	53
Leverington		4540		
Parson Drove		4460		
Newton		2880		
Tydd St. Giles		4450		

Source: Eau Brink Tax

Notes: Doddington includes the hamlet of Wimblington.

Table 3.7 indicates that the Isle of Ely parishes had a great deal of common fen which would have been regularly inundated by either fresh or salt water for a greater part of the year prior to the great drainage schemes which began in the mid-seventeenth century. Hence the Isle of Ely parishes were more densely settled than is evident from the work of either Glasscock, Sheail or Smith. In general the reduced size of the fenland parishes meant that their population densities were high, and amongst the highest in the country as a whole. (Figure 3.1)

Figure 3.1 Population density of the Isle of Ely at 1524/5.



Notes: To make comparison easier, the key and shading used on this map are those used by Spufford (1974) p11

While low densities of 5,9, 11 and 12 taxpayers per thousand acres were to be found in Mepal, Elm, Wisbech and Wentworth respectively, six settlements had over 50 persons assessed per thousand acres, while eight communities, including March and Doddington had between twenty and thirty-two taxpayers per thousand acres. Hence the fenland parishes were more densely settled than the upland of the county when the acreage of the fen is excluded. Thus, with such a contrast between the actual settlement areas of the community and the acreage of the parish it is evident that this factor needs to be taken into account when looking at population densities.

3.5 Population Distribution and Density 1524-1728

Problems occur when trying to chart the population dynamics of the Isle from the early sixteenth century since the data pose interpretative problems.

The episcopal returns of 1563 and 1728 are comparable, to some extent, with the numbers given in the hearth tax returns in that they can be interpreted in terms of households. However, comparing these three returns with the 1524 lay subsidy returns pose interpretative problems since this latter return included all persons over the age of sixteen.

Since these early sixteenth century figures include all taxpayers, they are bound to be proportionally larger than those giving only households. While it is impossible to establish what proportion of the taxpayers were sons living at home or servants, it can be assumed that since there should be a fall in the numbers returned between 1524 and 1563, any rise in the population would be concealed or minimised. However, the existing documentary sources provides strong evidence of a continuing population growth in fenland Cambridgeshire between 1524 and 1563. (Table 3.8)

Table 3.8 Population estimates from existing documentary sources for the Isle of Ely.

Parish	1524 Tax payers	1563 House holders	1674 House holders	1676 Inhabitants	1728 Fam
Chatteris	149	206	251	271	300
Coveney	41	46	102	263	70
Doddington	59	201[a]	190	813	50[b]
March	88		322	949	300
Downham	102	80	162	412	
Elm	62	122	74	414	
Ely Trinity	404[c]	246	517	1686	
Ely St. Mary		154	241	651	180
Haddenham	222	188	281	700	250
Leverington	98	146	153	416	150
Parson Drove		55		50	
Littleport	93	80	248	556	130
Mepal	16	14	35	116	
Newton	61	38	43	150	20
Outwell	49				
Stretham	105	119	161	428	
Sutton	152	100	192	490	
Tydd St. Giles	78		67	169	50
Upwell	48				
Wentworth	14	12	25	78	20
Whittlesey	298	355	641	2021	1000
Wilburton	59	47	69	228	70
Wisbech St. Mary		71	228	284	
Wisbech St. Peter	164[d]	242	515	1424	600
Witcham	51	27	69	198	50
Witchford	43	30	63	167	44

Source: See text

Notes: a This includes March, Benwick and Wimblington

b This figure is for Doddington only.

c This includes Ely Holy Trinity and Ely St Mary

d This includes Wisbech St Peter and Wisbech St Mary

The numbers assessed in 1524 for the settlements in fenland Cambridgeshire are generally lower than those in the 1563 ecclesiastical survey. An exception to this general pattern is the silt fen parish of Newton, as well as the peat fen parishes of Downham, Haddenham, Littleport, Sutton and Wilburton.

However, the small discrepancy between the 1524 and 1563 figures for those settlements in the South Witchford hundred, such as Witchford, Wentworth, Coveney, Mepal, Littleport and Wilburton are suggestive of moderate growth rates in these settlements being concealed by the interpretative problems of the data sources. While accurate growth figures between 1524/5 and 1563 are an impossibility, the data are suggestive of a doubling of the population in Wisbech and Whittlesey, with a growth rate of approximately 50 percent for Chatteris, Doddington and Leverington.

This overall rise in the population levels for the Isle of Ely between the early sixteenth century and the ecclesiastical survey of 1563 is in direct contrast to that found by Spufford in the upland of the county where the total numbers assessed fell by around six percent between 1524 and 1563.[55] Spufford argued that the population as a whole, did rise after 1563 but only by thirty four percent, as opposed to a rise of more than 58 percent in counties such as Leicestershire and Hertfordshire. However, while the changes in the pattern of settlement within the Isle of Ely between 1524/5 and 1563 were considerable, it was the changes between 1563 and the hearth tax returns of the mid-seventeenth century that were dramatic.

Between 1563 and the hearth tax returns the population rise in the Isle of Ely villages varied between nine percent, and 49 percent, if the exceptional rise of 133 percent in Wisbech St Peter is omitted. However, it was the villages in the deep peat fen which experienced the most dramatic increases in population over the same period ranging from 67 percent at Ely St Mary to more than 200 percent at

Littleport. This expansion of the deep fen villages was one of the most significant and marked changes in the Isle.

Although all the Isle of Ely parishes experienced an increase in population between 1563 and 1674, this was not the case for the following half century. While Chatteris, Whittlesy and Wisbech St Peter had some evidence of growth during the period from 1674 to 1728, this is in direct contrast to the other fenland parishes. While parishes such as Wisbech, Wilburton, Wentworth and Leverington remained relatively stable, with only slight variations between the population levels of 1674 and 1728, the others experienced a population decline. March and Haddenham had twenty two and thirty one fewer families respectively in 1728 than were in evidence in the mid-seventeenth century, while Littleport experienced a halving of its population levels between these two dates. The population levels at 1728 were, on average, thirty one percent lower than at 1674. However, part of this decline may have been due to evasion or under-registration in the ecclesiastical returns for the visitation of 1728, but nonetheless, there was a considerable decrease in the population of the Isle of Ely, with the parish of Newton actually falling below its 1563 figures.

This decline in the population, occuring after the initial great fen drainage schemes of Vermuyden in the mid-seventeenth century, is suggestive of a Malthusian explanation. The availability of land within the Isle that was not being constantly inundated was limited. Even after the great seventeenth century drainage schemes the usable land was soon outstripped by the population it could feasibly support. The pressure that this population explosion exerted on the economy of March was evident as early as 1669,[56] when the population growth resulted in the overstocking of the commons, and Sir Algernon Peyton entered into an agreement with his 165 March tenants which defined the system of commoning at great length.[57]

Since there was evidence of population growth exerting pressure on the economy in 1669 the growth of the population between 1563 and 1674 may have peaked slightly earlier and might have been beginning its downward trend around 1674. The point at which the population began to outstrip its resources is not evident from the political demography reminiscent of Gregory King. What is required is a study of the interplay and subsequent effect of population changes on the local economy and society. Hence one needs to look at the micro level and an appropriate technique is to study the aggregative analyses of the parish registers in detail.

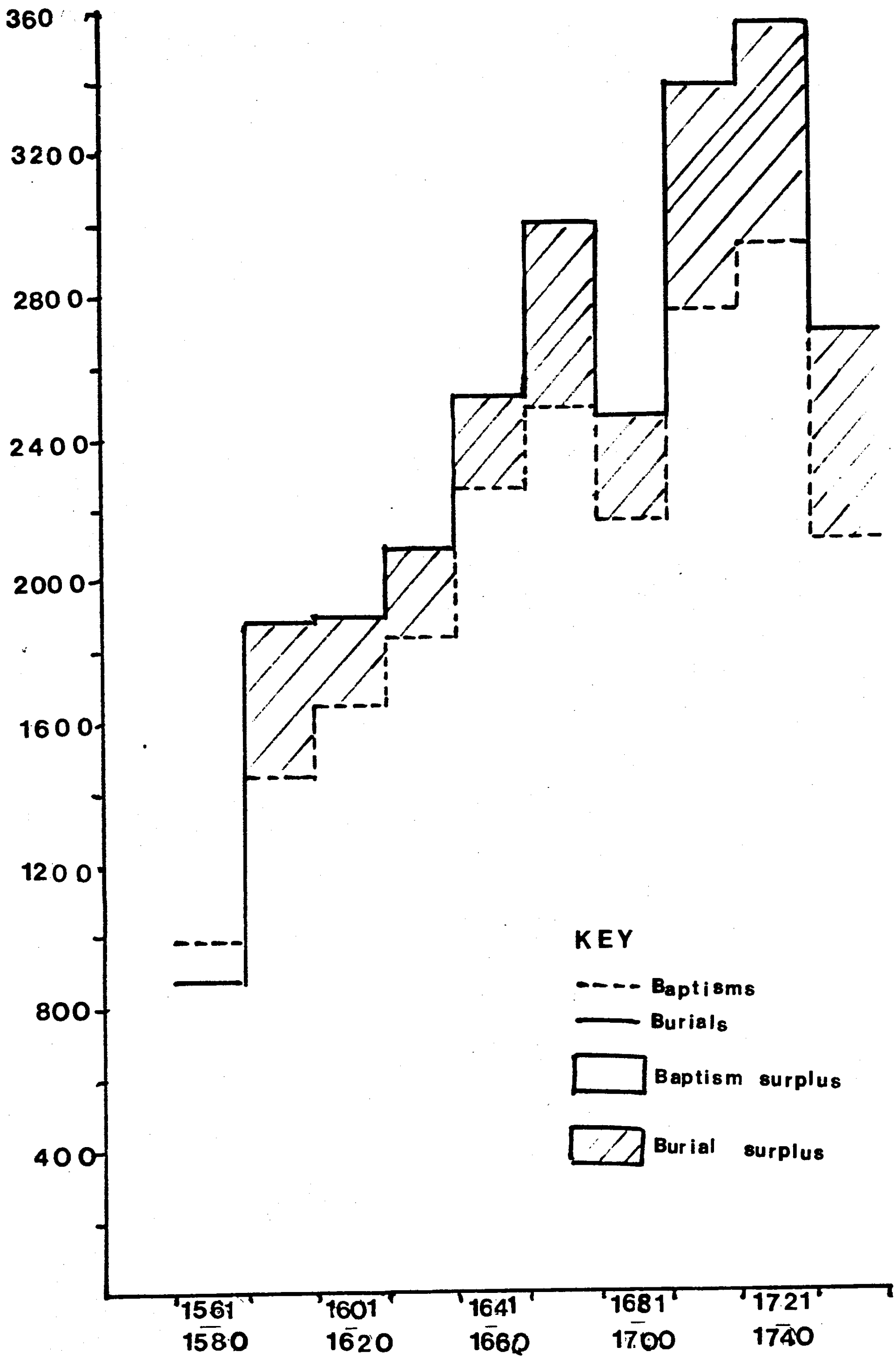
3.6 An aggregative analysis of the Isle of Ely

Unfortunately, vital registration events fail to start until the mid-sixteenth century, hence they miss the earlier part of the rising population in fenland Cambridgeshire suggested by the fiscal and ecclesiastical sources above. Moreover, the parochial registration system was not instigated as a databank for demographic statistics, and its efficiency as a source for all vital registration events occuring within any one parish, certainly diminished over time.[58]

Population change in the Isle of Ely was examined between 1550-1750 by compiling aggregative analyses of baptisms, burials and marriages for the four communities of March, Wisbech St Peter, Haddenham and Ely Holy Trinity. These four communities were chosen simply because they offer contrasting topographical features. Wisbech St Peter lies on silt fen, March is a peat fen island, Ely Holy Trinity is distinctive in that it is the ecclesiastical seat, while Haddenham lies on a spot height of 123 feet, some 100 feet higher than the other parishes. Furthermore, Haddenham is an agricultural community, while March, Wisbech and Ely are fen towns.

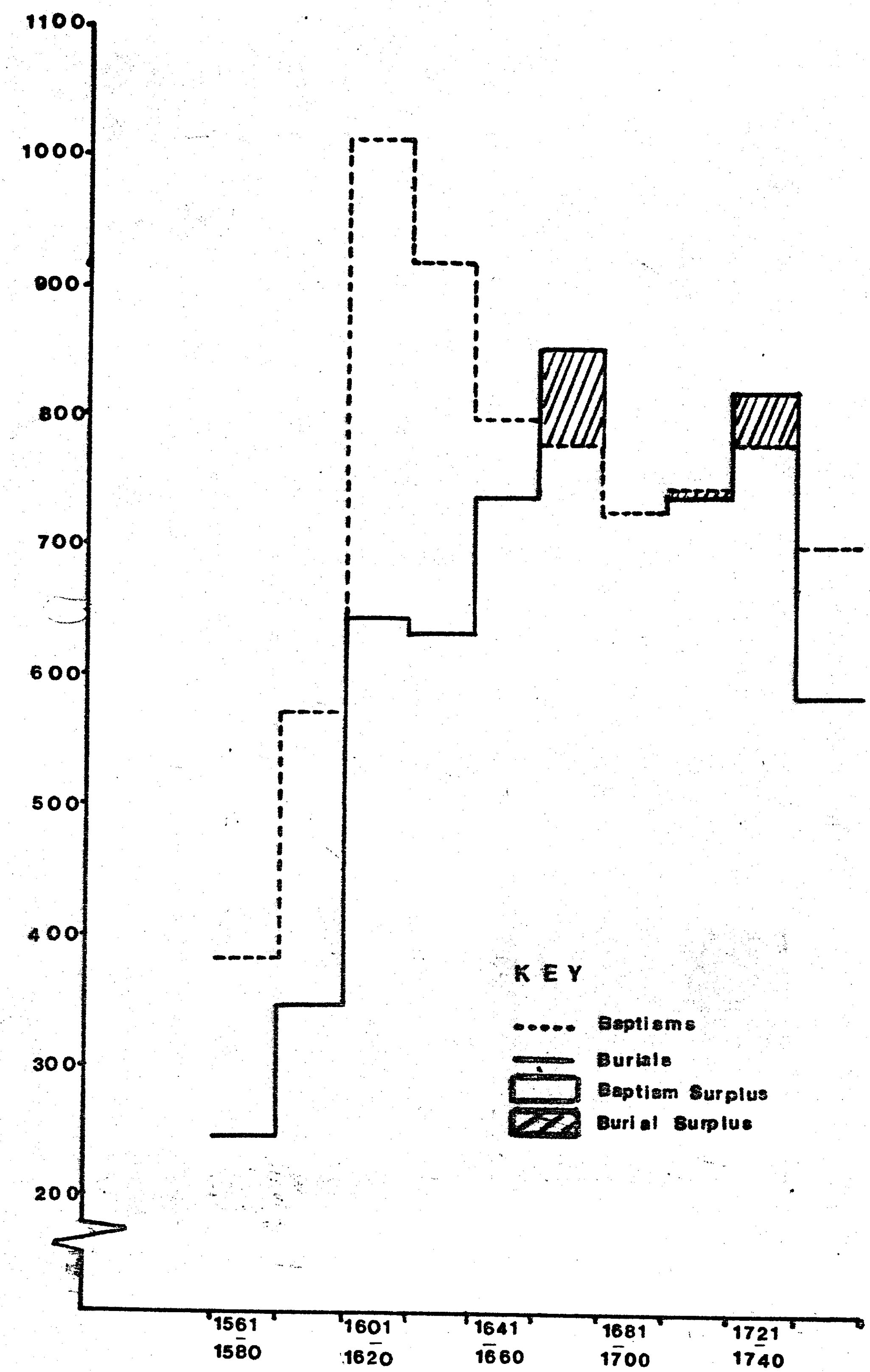
The simplest method of determining population change is to graph the totals of both baptisms and burials. Figures 3.2-3.5 show the fluctuation in baptisms and burials by twenty year periods and exhibit marked differences. Wisbech St Peter (Figure 3.2) experienced no natural increase. Burials **consistently** exceeded baptisms for all twenty year periods from the late sixteenth to the mid-eighteenth century, with the period from 1721-40 experiencing a burial surplus of 612, a crisis period noted in the national data of Wrigley and Schofield.[59]

Figure 3.2 Baptism/burial surplus by twenty year periods for Wisbech St Peter.



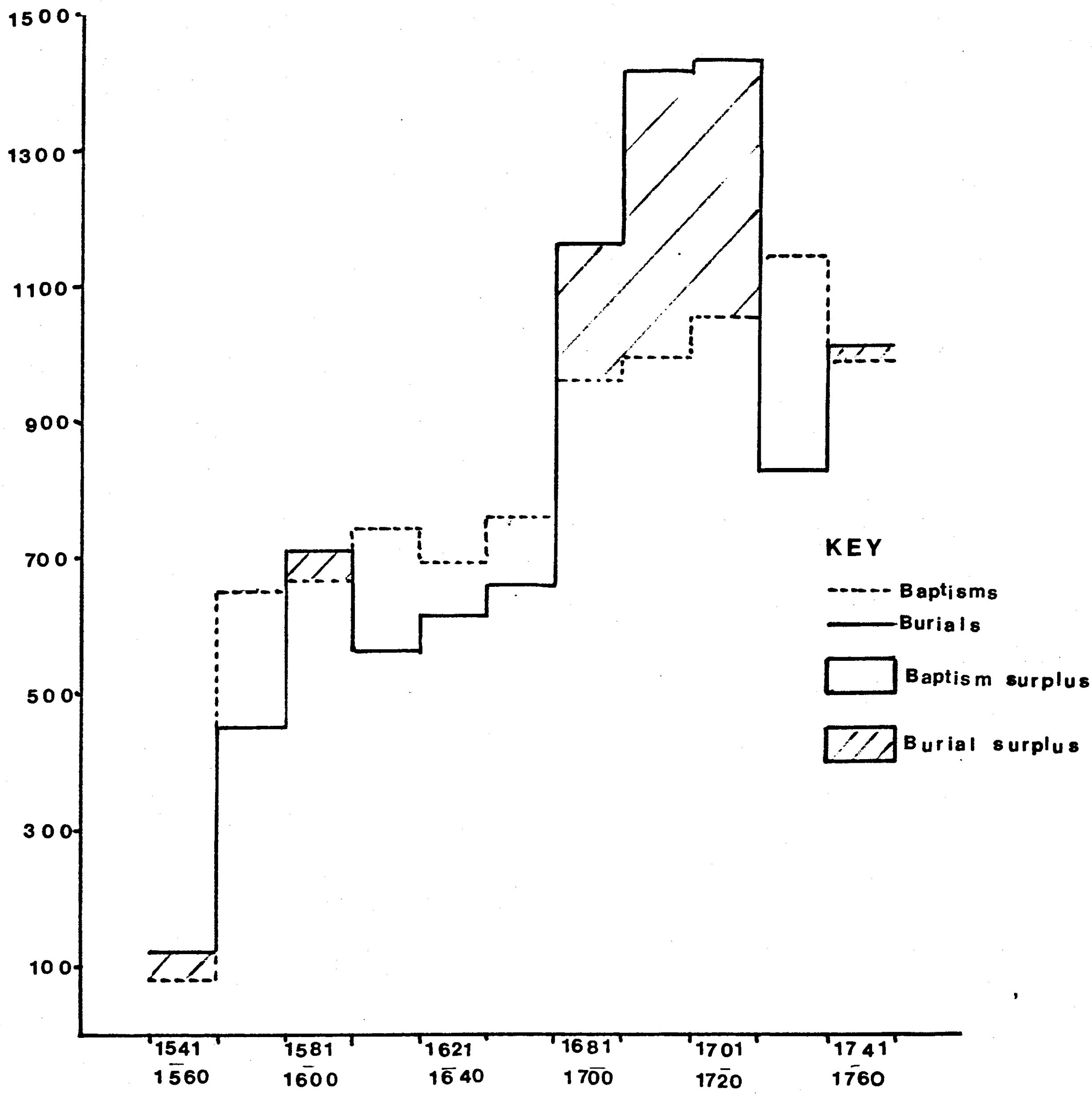
Source: Aggregative analysis of seven Isle of Ely parishes.

Figure 3.3 Baptism/burial surplus by twenty year periods for Haddenham.



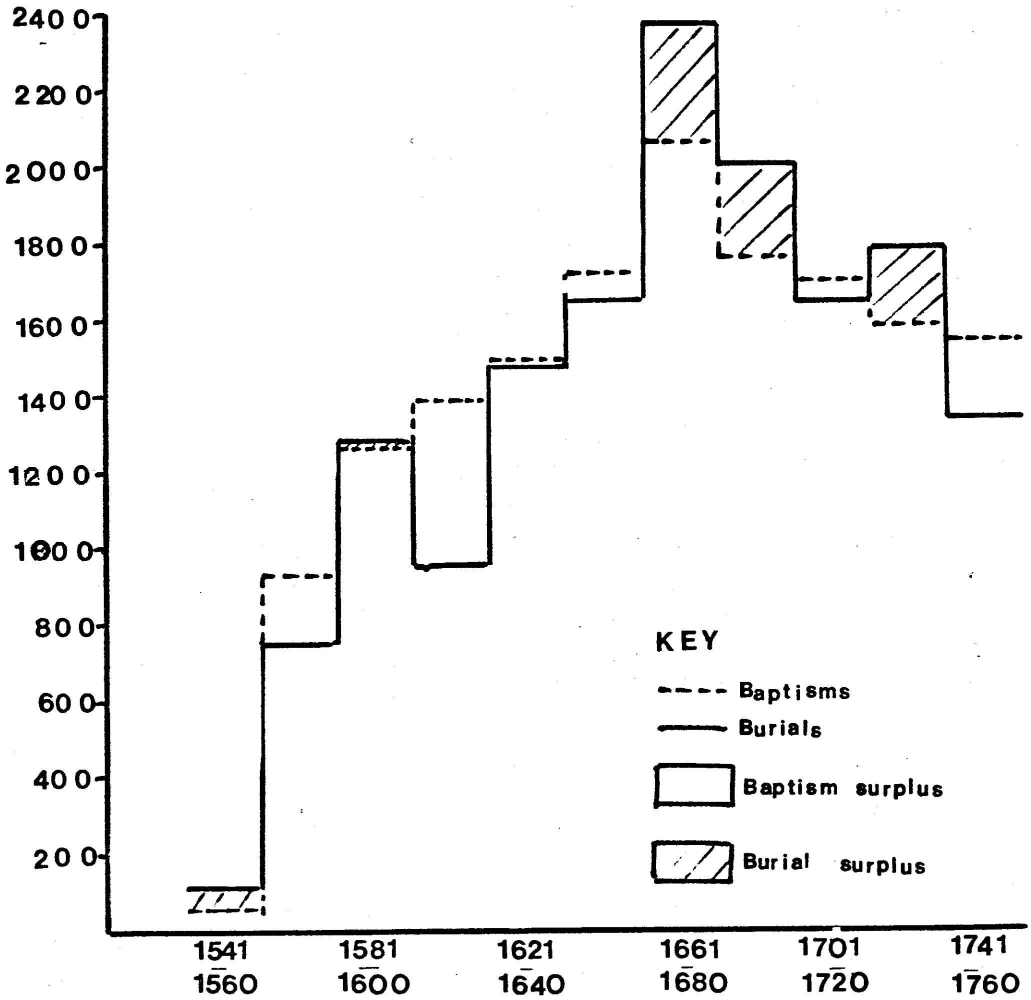
Source: Aggregative analysis of seven Isle of Ely parishes

Figure 3.4 Baptism/burial surplus by twenty year periods for March



Source: Aggregative analysis of seven Isle of Ely parishes

Figure 3.5 Baptism/burial surplus by twenty year periods for Ely Holy Trinity.



Source: Aggregative analysis of seven Isle of Ely parishes

The parish of Haddenham, (Figure 3.3) at the other extreme, experienced a great deal of natural growth with only two periods when burials slightly exceeded baptisms. March (Figure 3.4) and Ely Holy Trinity (Figure 3.5) lie between these two extremes with high mortality and consequently little natural growth during the second half of the seventeenth century and for part of the eighteenth century. These variations are suggestive of diverse demographic characteristics in evidence in fenland Cambridgeshire. However, this method is simplistic in the extreme, and the course of population change was further examined by compiling a nine year moving average from the aggregative data.

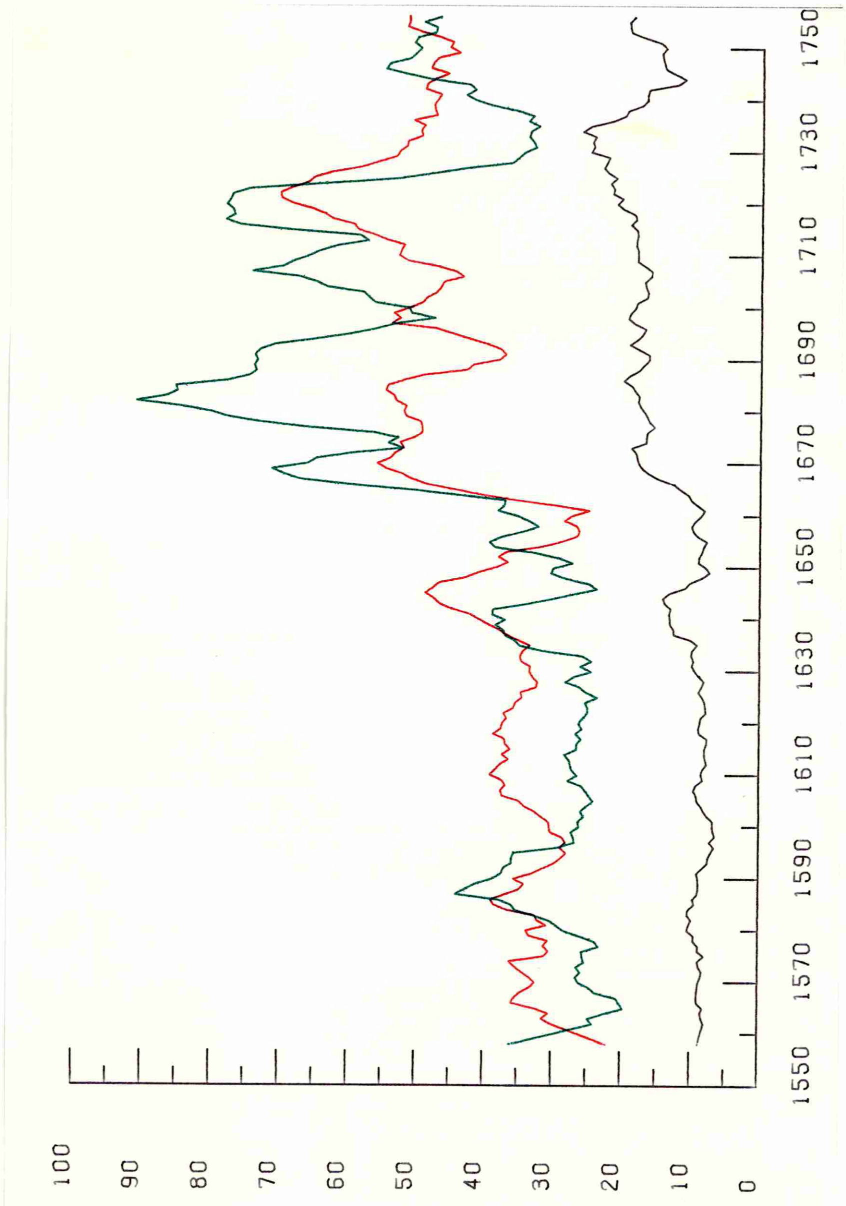
The moving average for March (Figure 3.6) shows an excess of baptisms over burials until the mid-seventeenth century except for the short crisis period in the late 1580's. On the other hand, from the mid-seventeenth century to the second decade of the eighteenth century, burial figures were generally above baptisms. For the following two decades, the trend was reversed with baptisms exceeding burials, except for a short period in the late 1740's. During the late seventeenth century there was a substantial peak in burials which was surrounded by three smaller, but no less substantial peaks in the 1660's, the early eighteenth century and the second decade of the eighteenth century, suggestive of the unhealthiness of March.

The vital registration events of March are also indicative of its growth from a rural village, experiencing outmigration, to a market town which provided inmigrants with employment. During the first hundred years of the parochial registration events for March, although baptisms exceeded burials, relatively little population growth was in evidence. This relatively stable population is typical of a rural area, with the majority of the young adults moving away in order to find employment. The population increased during the initial period of the drainage works in the few years prior to the Commonwealth period, though this growth was short lived. Thereafter, followed a decline in the population levels during the Interregnum. Growth occurred after 1660, and although burials exceeded baptisms during the following 65 years except for a few years around the turn of the eighteenth century, there was an overall upward trend in the number of baptisms. Hence, a considerable movement of adults into March is indicated by the rising baptisms. This overall rise in baptisms, despite the hostile demographic regime, is a classic sign of inmigration into the community concerned. However, from 1725 the population entered a period of decline, although once again, baptisms exceeded burials. This combination of a natural increase in the population of March, coupled with the tendency for the number of recorded baptisms to fall is very suggestive of a decrease in the numbers of child bearing couples living in the town and for considerable outmigration. Considering the proven mobility of the population in early modern England, it is probably more accurate to suggest that outmigration outweighed inmigration.

This decline is particularly significant, and could be due to a Malthusian explanation. Even after drainage land was occasionally inundated by water, with the water from the disastrous flood in the autumn of 1799 still in evidence in May 1800.[60] Hence, the availability of land, even after the drainage schemes were in operation, was limited. Thus, it is feasible, that by the second decade of the eighteenth century the population levels were outstripping their resources.

While the aggregative analysis of March is indicative of its changing role from a rural village to a market town, the moving average for Wisbech St Peter is indicative of inmigration occuring from the inception of the parochial registration system until the early eighteenth century, far moreso than in the upland of the county of Cambridgeshire.

Figure 3.6 Nine year moving average for March



KEY

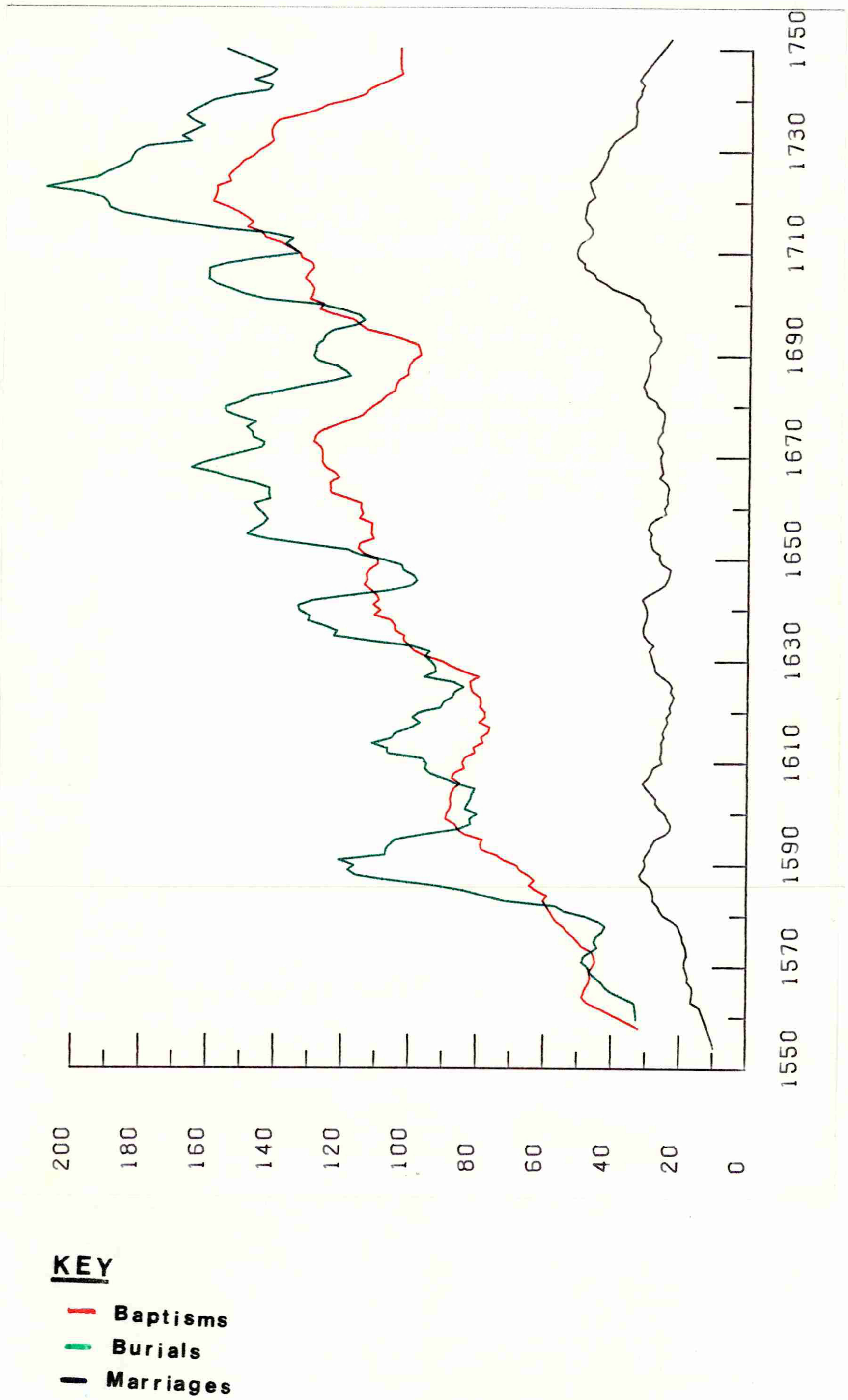
Baptisms

Burials

Marriages

Source: Aggregative analysis of seven Isle of Ely communities.

Figure 3.7 Nine year moving average for Wisbech St Peter

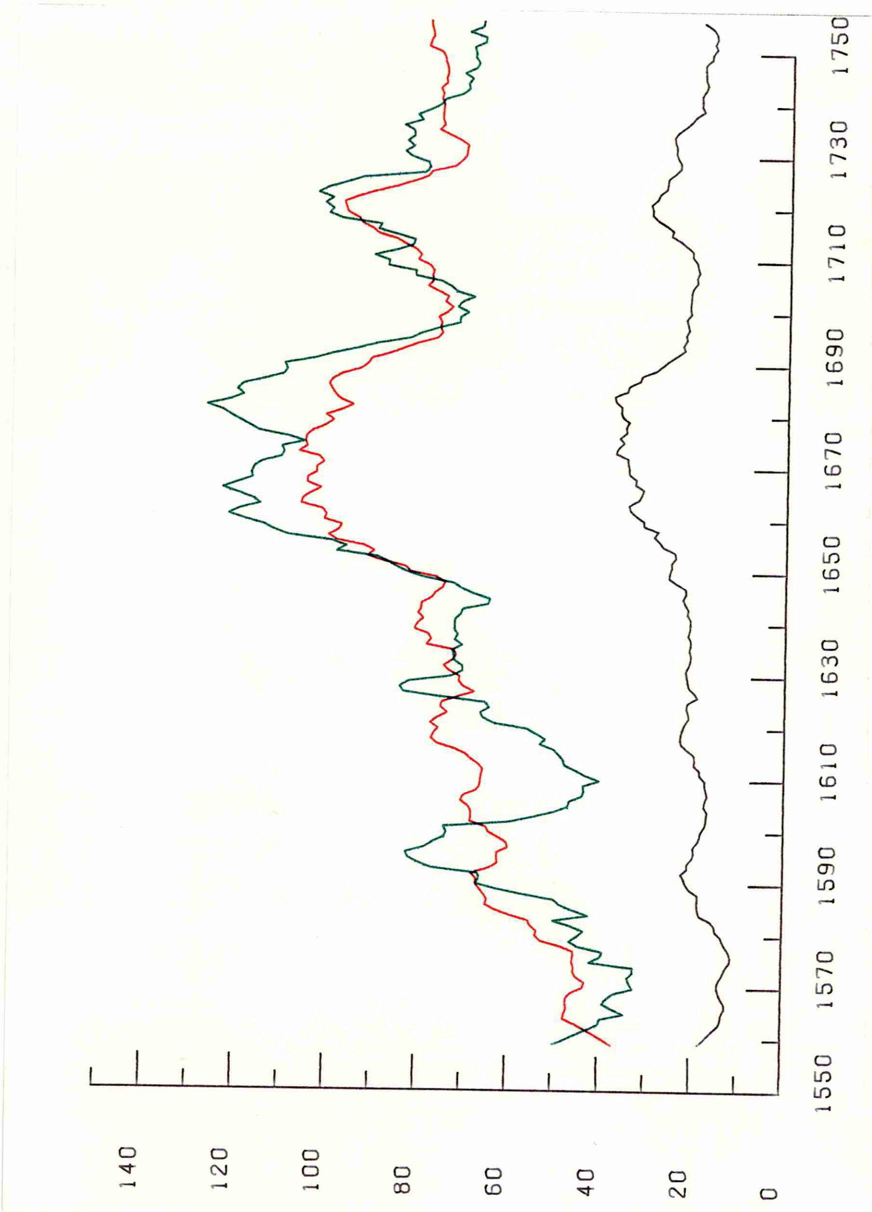


Source: Aggregative analysis of seven Isle of Ely communities.

The most striking feature of the moving average for Wisbech St Peter (Figure 3.7) is the constant excess of burials over baptisms, except for relatively short periods around the middle of the sixteenth century and occasional years around 1600, 1640 and 1700. Furthermore, the overall upward trend experienced by baptisms until the early eighteenth century, albeit with two small troughs in the seventeenth century, is indicative of considerable inmigration taking place. The decline in the number of baptisms in the 1620's and the last two decades of the seventeenth century may well be due to the effect of the crisis periods experienced in Wisbech St Peter during the late sixteenth and early seventeenth century. However, the decline in baptisms from the peak of 1720, is similar to that experienced in March and most likely due to the population outstripping its resources. However, while in March, in this latter period there was temporally an an excess of baptisms over burials, this was not the case for Wisbech St Peter where burials still exceeded baptisms.

While adjacent parishes might be expected to exhibit vaguely similar mortality peaks, this was not the case for the communities of March and Wisbech St Peter. The crisis periods in both communities rarely corresponded to each other. The substantial peak in mortality in March occurred in the early 1680's, while Wisbech St Peter experienced its worst mortality crisis, half a century later. This discrepancy between mortality peaks is possibly due to the topographical differences of these two communities, and will be discussed in further detail later.

Figure 3.8 Nine year moving average for Ely Holy Trinity

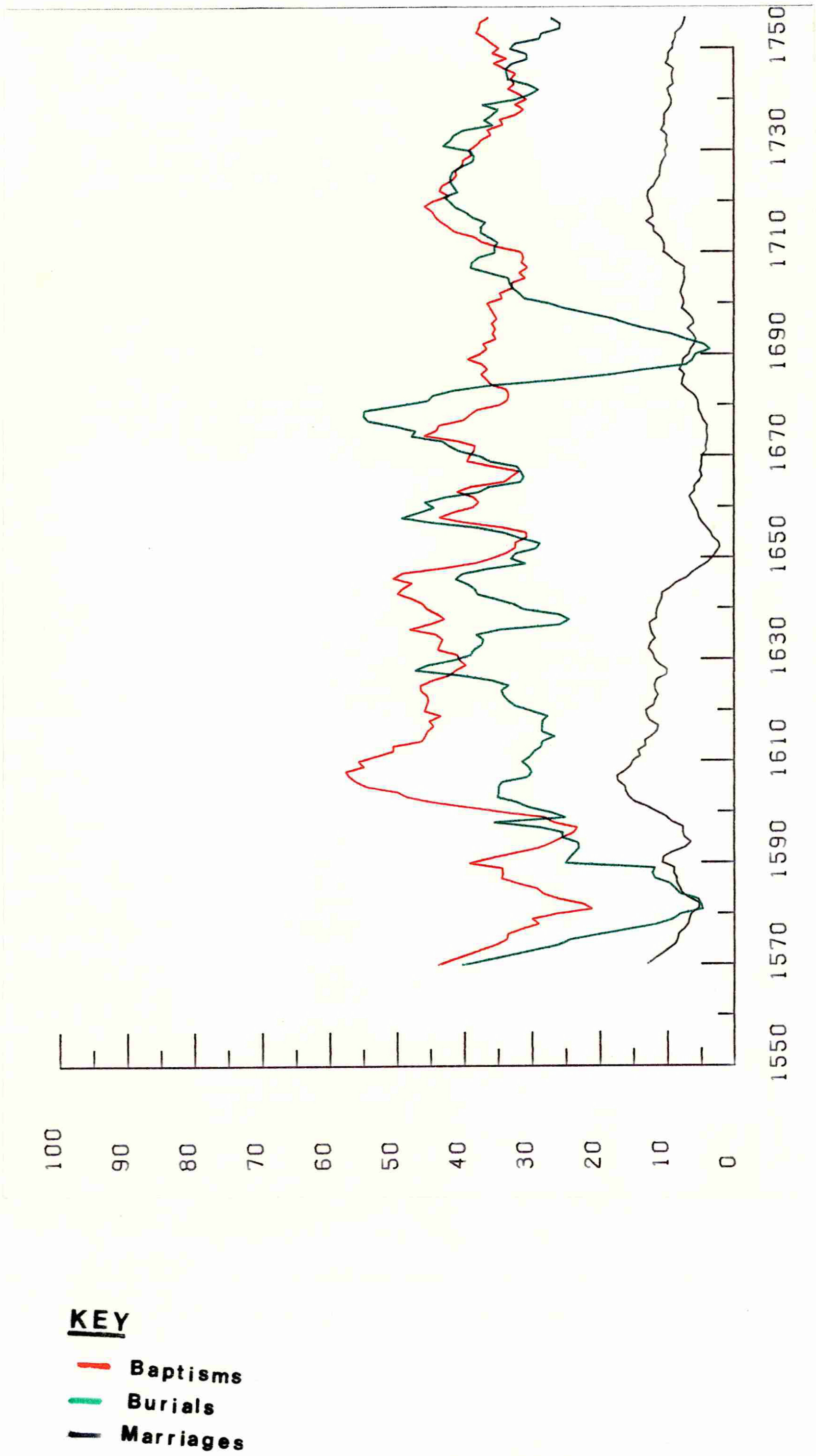


KEY

Baptisms
Burials
Marriages

Source: Aggregative analysis for Ely Holy Trinity

Figure 3.9 Nine year moving average for Haddenham



Source: Aggregative analysis for Haddenham

The vital registration events for Ely Holy Trinity (Figure 3.8) exhibit a general excess of baptisms over burials from around the mid 1560's to the mid-seventeenth century, apart from the crisis years of the late sixteenth century and the 1640's. From the mid-seventeenth to the mid-eighteenth century the trend is reversed in that burials are generally in excess of baptisms apart from the short period around the turn of the eighteenth century and the 1740's when baptisms slightly exceeded burials.

Up until the mid-seventeenth century Ely Holy Trinity experienced little overall growth, as in March, while the following twenty years are suggestive of inmigration. From the late 1670's a decline in the population occurred, which once again began to rise in the first two decades of the eighteenth century, before experiencing the decline felt by both March and Wisbech St Peter after 1725, although not to the same extent.

In Haddenham, (Figure 3.9) baptisms generally exceeded burials until the mid-seventeenth century apart from the last decade of the sixteenth century and a few years in the late 1620's. From 1656, on the other hand, baptisms and burials were closely aligned with each other.

Comparing the aggregative analysis of Haddenham with the other fen parishes produces some striking anomalies that could not be simply explained by the fact that Haddenham was a rural village whilst the other three communities were market towns.

Haddenham experienced its peak of population growth in the early seventeenth century, half a century before the population in either March or Ely Holy Trinity began to rise. In fact, the population growth in this fenland parish up to the mid-seventeenth century is more closely aligned to that of Willingham, a parish on the edge of the fens, than the parishes within the fens. Furthermore, Haddenham had a stagnant population after the mid-seventeenth century and was once again more comparable to the villages on the western clay plateau of the upland of the county, such as Orwell.[61]

The results of the aggregative analysis are suggestive of the population of the Isle of Ely increasing in those communities lying on the silt fen between the inception of the parochial registration system and the early eighteenth century.

Population growth in the deep fen parishes occurred after the start of the great drainage schemes. This growth continued until the early eighteenth century, when the silt and deep peat fen parishes experienced a decline in the population, conceivably due to a Malthusian explanation. However, the parishes on the edge of fenland Cambridgeshire, such as Haddenham, experienced their highest increase in population around the early seventeenth century, long before drainage had begun.

The burial surplus in March and Ely Holy Trinity from the mid-seventeenth century, coupled with the overall upward trend in baptisms is indicative of the drainage schemes making the peat fen a more viable place in which to reside. However, the high and numerous mortality crisis periods are suggestive of many of the new immigrants failing to acquire any immunity to the endemic diseases prevalent in these settlements, a point which will be considered in later chapters.

However, the whole question of population growth and decline becomes much more complex when attempting to relate the increases and decreases suggested by the fiscal and ecclesiastical sources and the aggregative analyses of the vital registration events to the changing size of the settlement.

3.7 Population growth:natural increase or inmigration?

One way of approaching the question of population growth and decline is to consider the related and relevant question of how communities grew. Were the Isle communities purely at the mercy of demographic factors to promote or retard growth, or did the rates of population change reflect the communities economic pull over the flow of migrants?

From the results of the aggregative analyses the answer seems to have been through a combination of a little natural growth and considerable inmigration. Prior to the mid-seventeenth century, little population growth was in evidence in the peat fen parishes. However, from the mid-seventeenth century all three fenland market towns were experiencing an apparently hostile demographic regime in that burials were higher than baptisms.

Burial surpluses in the Isle of Ely increased after the mid-seventeenth century which may have been due to the pressure of population growth. This population growth and the high densities in the compact settlements meant that the problems tended to expand at least as fast, and probably faster than possible improvement. The seventeenth century was not a period of major advancements in medical care but it was a period of virulent epidemic diseases such as smallpox, influenza, typhus and others, including the 'ague' which killed many people in the Isle of Ely. In these circumstances, growth could only take place by inmigration.

However, one striking point from the mid-seventeenth century is that despite the hostile demographic regime, the number of baptisms were still rising. Hence growth through inmigration was the key to the population dynamics.

The assertion that the communities in early modern fenland Cambridgeshire grew chiefly by inmigration depends upon the assumptions that there was a plentiful supply of potential inmigrants. Recent research has shown that England was a society on the move, exploding the myth of the English peasantry being tied to the soil However, what determined migration? Did people move into the fenland towns through the ‘pull’ of the market town or the ’push’ of rural unemployment? In search of betterment or mere subsistence?

The scale and direction of population movement is closely linked with the existence of economic opportunities; by the demand for labour and the multifarious opportunities for economic survival. When examining the complex pattern of early modern economic growth in fenland Cambridgeshire it is necessary to examine the the attributes that allowed the fen communities to attract a migrant population.

The specialised function of the fenland towns varied over time. Initially March was an inland port and the growth of this water based commercial activity led to the formation of the market place along the bank of the River Nene. Wisbech also grew as a port and by 1680 trade had developed to such an extent that Wisbech port gained its independence from Lynn.[62] Ely, on the other hand, is known to have provided small loans and employment for many of its inhabitants from the sixteenth to the early eighteenth century.[63]

All market towns depended upon a degree of commercial activity and a basic network of trade for their economic survival. Owing to difficulties in overland transportation, much inter-regional traffic was moved along coastal and inland river systems which meant that the volume of inland trade tended to generate a much greater visiting than resident population. Furthermore, a market or fair could attract great numbers. One of the more well known was the annual Stourbridge fair held outside Cambridge each September. Great numbers of wholesale and retail dealers and buyers congregated there for a few weeks attracting ‘most trades that can be found in London, from whence many of them [dealers] come’.[64] Stourbridge fair was an important trading venue and played an important role in the annual calendar of commercial dealings and was especially famed as a wholesale market for wool, woollen textiles and hops.

The expansion of trade undoubtably under-pinned the economics of the fenland market towns but needed to be accompanied by other functions in order to promote growth. Specialisms were in part suggested by the location of raw materials. Thus a specialised role tended to become reinforced by the acquisition of the relevant production skills among the inhabitants, the growth of a reputation for a particular product, and the development of a marketing network.

However, it must be stressed that within any community, the greater the variety of specialised functions carried out, the greater the size of the population. While there was a trend towards specialisation in March[65] it is important to remember that the maintenance sector, the provision of food and drink, was always an important source of employment in any community.

However, it is unlikely that the expansion of the fenland market towns occured through any one factor in isolation and in order to look at this point in more detail it is proposed to examine March in terms of its changing economic functions in the following chapter where attention is given to the special economic functions promoting its growth in the course of the mid-sixteenth to the mid-eighteenth century.

3.8 Conclusion

An outline of population change in the Isle of Ely has been presented. A variety of sources, of both a static and aggregative nature, were used in order to evaluate the course of change. The fiscal and ecclesiastical returns were of most use in facilitating the fairly rapid plotting of the population in the Isle of Ely to determine the distribution of the population at varying points in time. Unfortunately, the peculiarities of the topography of the fens, small settlements surrounded by acres of fen, meant that it was impossible to calculate population density from the fiscal or ecclesiastical sources by taking the simple acreages of the parishes concerned. The results of the population density calculations within the Isle of Ely once the fen was excluded is provocative as well as informative.

While the fiscal and ecclesiastical returns were of most use in determining the general dynamics of the population characteristics the aggregative analyses provided a more detailed outline of the population distribution.

One striking characteristic of the population dynamics of the early modern communities within fenland Cambridgeshire were their marked topographical variations. Burials generally exceeded baptisms and the ravages of endemic disease were more ferocious than in most other parts of early modern England. This is not to argue that other parts of England were a haven of cleanliness and good health, but certainly it was relatively healthier in most other parts of England than in the majority of parishes within fenland Cambridgeshire. However, despite the hostile demographic regime, population growth was in evidence in the deep peat fen parishes from the mid-seventeenth to the mid-eighteenth century.

Although the population began to increase in the deep fen from the mid-seventeenth century and on the silt fen from the inception of the parochial registration system the extent to which it had grown in specific areas of Fenland Cambridgeshire still requires more detailed study. It is evident that the population grew at different rates in different settlements and the impact of infant mortality, endemic and epidemic disease varied according to the socio-economic composition, as well as the topography of the locality in question.[66]

This description of the population levels, growth and change within the Isle of Ely can now be used as the backcloth against which to consider the general reasons for the change in the socio-economic structure of the fenland Cambridgeshire community of March from the mid-sixteenth to the mid-eighteenth century. While it has become something of an overworked truism that every age is to some extent an era of change and to some extent an era of continuity, the period from 1550-1750 certainly qualifies as a period in which the forces of change were in evidence within the Isle of Ely. Although it was not a period of economic take off, it was a period in which the foundations of social and economic change were being laid.

References

1. Gibbon Chapter xxxi

2. See Beresford (1963) especially p7

3. Glasscock, thesis (1963)

4. See Sheail, thesis (1968) and the revisions to the gazetter (1980)

5. See Schofield, thesis (1963)

6. The Hearth Tax Returns for 1662, 1666 and 1674 for Cambridgeshire have been analysed by Meeking in VCH Vol 4 pp272-280. Also see Arkell (1982); Alldridge (1984) and Gibson (1985).

7. Cornwall (1965) p19-24

8. BM Harl 594 ff198-220

9. BM Harl 280

10. See Dalrymple, (1771-3) pp11-15

11. See EDR B/8/1 or Salt MSS 33 (William Salt Library, Stafford)

12. See Owen (1971) for a discussion and listing of the visitation returns for the Isle of Ely.

13. For example see Bishop LLoyds survey of Eccleshall made between 1693-98. A copy of this survey, which is in the Stafford Record Office, is held at the Cambridge Group for the History of Population and Social Structure.

14. The Protestation returns, which record sworn loyalty to the King of all males aged over sixteen, only survive for

the University of Cambridge.

15. PRO C213/26 The Association Oath Rolls exist for the whole of the upland County of Cambridgeshire and the Isle of Ely. Unfortunately, those for the Isle of Ely are one long list of names and are not detailed by parish, as they are for the upland County of Cambridgeshire.

16. Elton (1969) pp53-4

17. The 1524/5 Lay Subsidy gives minors if they held goods to the value of at least £2.

18. See Houston & Smith (1982) for information regarding Grindals injunction of 1571 which laid down that the age at first communion for Anglicans should be between the ages of 14-15 although it would appear from other sources that the usual first age at communion was between 15 and 16 years of age.

19. See for example Arkell (1982); Thirsk (1959) part 1 pp129-33 and part 2 pp182-5.

20. See Laslett (1969) p14-5 for a definition of these terms.

21. See for example, Laslett and Wall (1972) and Kussmaul (1981).

22. Laslett and Wall (1972) p103. See also Wall (1979).

23. Wrigley & Schofield (1981)

24. See Thirsk (1959) for a general discussion of these sources.

25. Whiteman (1986)

26. EDR B/8/1 I am grateful to Mrs D Owen for the loan of her transcript of these returns while the original document was being repaired.

27. See EDR B/8/1 The one deviation from this general format for the Isle of Ely was given by the incumbent of Chatteris, who returned the total number of families, the number of nonconformists and the total number of recusants.

28. These were also the two reference points used by Wrigley and Schofield (1981) in their definitive work on the national data.

29. The extent of the correlation between variables is indicated by the magnitude of the covariance. If there is little or no relationship between the variables, a given value of one variable is associated equally with large and small values of the others. If the variables are independent then $r=0$. If there is an exact linear relationship between the two variables then $r=1$, for variables which increase together and $r= -1$ when one variable increases while the other decreases. In practice, r lies between these special and extreme cases, ie between 0 and 1. The sign indicates whether the correlation is positive or negative and the magnitude shows the degree of correlation.

30. See Wrigley and Schofield (1981) Table 2.2 p37

31. See Bede Book 19 Chapter 4

32. See Hart (1974) for a discussion of the hidation of Cambridgeshire. Although part of this discrepancy may be due to the hidage differences between the two periods, it is suggestive of a decrease in the overall population of the Isle of Ely between the Anglo-Saxon period and Domesday.

33. See B.M. Add MS 6165 for the 1251 subsidy

34. For factors affecting the siting of villages in fenland Cambridgeshire see Jones (1924) and Darby (1935).

35. See for example, Postan (1966) p561-3 and Russell (1948) p80. While these two separate studies give different figures for the levels of the population in England and Wales for these two dates, they do agree on the overall growth rates.

36. Spufford (1974)

37. Glasscock, thesis (1963) p15

38. Ravensdale (1974) p126-7

39. See Glasscock (1963) p34 where he suggests that even though the 1334 assessment failed to provide for the exemption of the poor, it took no account of the moveable property in the hands of a large number of people in every township, whose goods were less than the minimum value.

40. Ecclesiastical wealth was extremely important in the Isle of Ely. Although the extent of clerical wealth is not given within the lay subsidies, Darby (1940) p6 draws attention to the ecclesiastical influence revealed in the sessions of the Sewer in 1529.

41. Cam (1963) p216-9

42. See Sheail, thesis (1968) and the revisions to the gazetter (1980) for the taxable persons in each Cambridgeshire hundred. Sheail based his population density calculations on taxpayers per square mile, to make his work comparable to Glasscock's work on the 1334 lay subsidy. I, however, have based my calculations on taxpayers per thousand acres in order to make it comparable to Spufford's work on the upland of the county of Cambridgeshire.

43. By 1524, Lowland England as a whole had between eight and sixteen taxpayers per thousand acres, but the more densely settled regions, principally East Anglia, had between sixteen and twenty-three taxpayers thousand acres, with smaller areas within them having over twenty three taxpayers per thousand acres.

44. See Spufford (1974) p12

45. Spufford (1974) p12

46. Glasscock, thesis (1963) & Sheail, thesis (1968) pp154-161

47. Glasscock, thesis (1963) p 67-9

48. Glasscock, thesis (1863)

49. Sheail, thesis (1968)

50. Parish boundaries and acreages were not accurately surveyed until the nineteenth century.

51. See Maitland and Baildon (1891) p107 quoting Mr W. Marshall from the Cambridge Antiquarian Communications iv p97

52. CRO P/116/1/5

53. A copy of the Eau Brink Survey is held at Cambridge Public Library in the Cambridgeshire Local Collections department.

54. In the approach used by Smith (1965) the county was divided up into 3 km squares, with the parishes often straddling the boundaries of the squares, while Sheail, thesis (1968) placed 32,000 acres of Wisbech hundred into Witchford hundred.

55. Spufford (1974) These figures only cover the area of the county included in the Diocese of Ely for which there was a return in 1563. Hence, two of the fourteen hundreds, Staploe and Cheveley, which lie outside the diocese are omitted from this analysis.

56. PRO C/78/1415 No 3

57. About 4440 acres were set aside as common and cow pasture in two portions (a) Burrowmoor and Great and Little Binnimoor and (b) Stow fen, Great and little Hurst, part of Witch fen, Joan Slades Hole, Poutsherne, Low fen, Town End, Knights End, Tyburn, Northwood and Crawford Greens. From May Day to Michaelmas each tenant was allowed a maximum of 2 horses or 4 cows or 16 sheep, with double that number being allowed between Michaelmas and Lady Day. The fines for overstinting or overpasturing during the close season were 6d for a horse, 2 cows or 8 sheep in the case of a first offence and 1s for subsequent offences.

58. See for example Krause (1965) and Levine (1976). Also see Ulla Larsen's unpublished paper on the extent of under-registration in some Cambridgeshire parishes, a paper written while visiting the Cambridge Group for the History of Population and Social Structure in 1980.

59. Wrigley & Schofield (1981) p293-8, 384-401

60. See Young (1800) who states that 'In 1799, above 25,000 acres were under water until May 1800 to the south of the 100 foot drain and all much annoyed by the flood and it was a melancholy examination I took of the county between Whittlesey and March, the middle of July, in all which a tract of ten miles, usually under great crops of cole, oats and wheat. There was nothing to be seen but desolation with here and there a crop of oats or barley sown so late that they came to nothing'.

61. Spufford (1974) p18-22

62. VCH Vol 4

63. VCH Vol 4

64. Defoe (1728) p80-5 thought Stourbridge fair, which still takes place on the outskirts of Cambridge, to be the largest fair in Europe.

65. This point will be discussed more fully in chapters 4 and 7.

66. This point will be considered more fully in later chapters.

Chapter 4

Occupational Structure of March

4.1 Introduction

While early modern England was largely rural, with an estimated '50 to 80 per cent of the work force [being] more or less fully employed in agriculture',[1] the incidence and growth of occupational heterogenity cannot be ignored.[2] The 'drowned' nature of the fens and consequent natural resources caused the Isle to differ from most other early modern communities in its occupational structure because of its economic base, which had very specific demographic, and conceivably social, consequences.

Long term occupational analyses of English communities have always been hampered by the paucity of reliable data prior to the nineteenth century.[3] The contemporary accounts of the occupational structure for the sixteenth,[4] seventeenth,[5] eighteenth,[6] and early nineteenth centuries,[7] need to be viewed with caution, since they were compiled for specific social purposes. Harrison's table described a four part classification of the social hierarchy, King produced figures that warned against the 'Vanity of People in overvaluing their own Strength',[8] while Colquhoun described the resources available for a 'more enlarged and useful employment of the poor'[9]

Although these observations are an important source of contemporary information regarding the grouping of occupations, it is difficult to make a critical appraisal of the occupational composition of early modern England from sources primarily designed to tabulate the social hierarchical structure. Indeed, Lindert in his work on the occupational system of England from 1670-1811, has argued that at least one of these contemporary classical social tables was incorrect.[10]

The more recent studies on the occupational structure of early modern England are based on either the parochial registration system or wills. Wrigley's pioneering work on the reconstituted families of Colyton included an analysis based on the limited occupational entries evident in the Colyton parish registers for 1609-12, 1765-79, and 1813-19 as well as evidence gleaned from the nineteenth century censuses,[11] while Patten has used wills to evaluate occupational change in early modern Norfolk and Suffolk.[12]

While the concept of family reconstitution has introduced a far reaching dimension into the field of demography, it has failed to remove any of the problems regarding the occupational structure of early modern England. The need of occupational data for March is paramount before any comment can be made on the social structure, economic growth or socio-economic change evident during the period of this study. Occupational information is necessary in order to judge whether Christopher Hill's conjecture that 'life-long wage labourers may well have been a majority of the population'[13] could be applied to March or the Marxian converse that subsequent industrial capitalism transformed independent artisans and yeomen into dependent wage labourers.[14]

The following discussion argues that early modern March saw a growth in the number of non-agricultural activities, based not only on its fenland by-products but also on its development from a firmly established rural community to an urbanized one. Although the early nineteenth century censuses are outside the scope of this study, they will be used as a benchmark to show that March continued to evolve and by the mid-nineteenth century had expanded still further.

4.2 Data Sources

There are few comprehensive sources that delineate the occupational structure of any community prior to the nineteenth century.[15] Regional, county or parochial listings providing occupational detail are rare for early modern England.[16] Documents such as the Posse Comitatus of Buckinghamshire,[17] or parochial surveys such as those for Eccleshall,[18] Cardington,[19] and Corfe Castle,[20] are sporadic and infrequent in their coverage and distribution, with none in evidence for the town of March.

Freemans registers, which have been used to analyse the occupational structure of early modern towns,[21] and apprenticeship indentures, which are usually recorded in the quarter sessions for noncorporate towns and rural areas, are not extant for March.[22] There are, however, specific documentary sources which can be used to assess the occupational structure of early modern noncorporate towns and rural communities, with the most commonly used sources being the parochial registers,[23] wills,[24] or the returns of the Marriage Duty Act.[25]

Although there was no ecclesiastical directive for occupational information to be included within the vital registration system, many clerks gave such data at varying points in time. In the parochial registration for March, occupational data was recorded spasmodically during the sixteenth and early seventeenth century, but was more in evidence during the latter half of the seventeenth and early eighteenth century. This information was entered in all three registers with occupational labels being given to bridgegrooms, fathers of baptised infants, adult males on burial and to the fathers of children on the burial of the latter.(Table 4.1)

Table 4.1 Occupational data in the parish registers.

Period	Baptism	Burial	Marriage
1550-99	5	7	0
1600-1649	27	13	6
1650-99	113	72	14
1700-49	175	91	27

Source: March Parish Register

The events shown in Table 4.1 are not mutually exclusive, in that occupations for some adults occurred in more than one register. Whilst the references to occupations in the sixteenth and early seventeenth centuries tended to be used as a means of identifying individuals more clearly,[26] this was not the case for the period 1650-1750.

There was more occupational detail evident in the baptism registers than in the burial or marriage registers. At marriage the grooms occupation was given on rare occasions and includes men who were on average younger than those in either of the other registers. On the other hand, the burial register tended to provide occupational data for a high proportion of older men, especially as until the late seventeenth century, few occupations were given for the fathers of children who had died. The baptism register provided the greatest proportion of entries, and is a possible guide to the degree of occupational change over the period of research in question. Since the coverage of all three is not identical, there is the problem of a possible substantial difference in the picture presented by the three registers. However, the relative frequency of the occupations of the adult males given in the three registers is probably similar to that of the heads of families in the mid-nineteenth century censuses, unless there was a significant difference in the proportions marrying or in marital fertility between occupations.

The increase in the occupational detail evident in the vital registration events for March coincides with its population expansion. This may have been indicative of the parish clerk seeing more need to identify inhabitants by occupation as the town grew. However, on the other hand, the spread of literacy, cheaper paper and the precedent of recording titles and ranks for the Marriage Duty Act of 1694 may have fostered the almost consistent recording of occupational detail in the eighteenth century.

Due to the patchy existence of occupational data in the parochial registration system especially in the sixteenth and early seventeenth centuries, information on occupations was also abstracted from all surviving wills,[27] administration bonds,[28] and probate inventories.[29] This was supplemented by reference to documents such as as churchwardens accounts,[30] and visitation returns.[31] Other potentially useful sources such as poll taxes,[32] muster rolls[33] and association oaths,[34] failed to have an addition regarding the individual's occupation.[35]

Not all wills or probate inventories gave the testators occupation. Indeed, prior to the seventeenth century, occupations were recorded only in a minority of cases.(Table 4.2)

Table 4.2. Wills, probate inventories and administration bonds left by adult males by half century.

Period	1 Occ not given	2 Occ given	3 Total	4 Adult males dying	% of 3/4	% of 2/3
1550-99	80	69	149	253	59	48
1600-49	29	106	135	372	36	79
1650-99	51	144	195	798	24	74
1700-49	61	211	272	819	33	78

Source: Wills for the inhabitants of March
The aggregative analysis for the number of adult males dying by half century.

Table 4.2 clearly demonstrates that although the proportion of testators providing occupational information was relatively stable from the early seventeenth century, a smaller proportion of the growing population actually left a will. Undoubtably, few people owned sufficient goods or chattels to justify the expense of having a will drawn up. Also, as is to be expected, not all wills, probate inventories or administration bonds supplying occupational data were able to be linked into the reconstitution since family reconstitution forms did not exist for all willmakers. (Table 4.3)

Table 4.3 Wills, probate inventories and administration bonds linkable and non-linkable to the reconstitution.

Period	Inf[a]	Sp[b]	Bac[c]	Wid[d]	Occ Not Given	Occ Given Not Linked	Occ[+] Given and Linked	Total Wills
1550-99	0	0	2	11	80	33	38[e]	160
1600-49	0	0	1	24	29	76	37[f]	159
1650-99	0	1	7	11	47	69	80[g]	207
1700-49	2	1	1	27	61	94	126[h]	302

Source: Wills for the inhabitants of March. HK2799-2808

Notes: a Infant
b Spinster
c Bachelor
d Widow
e includes 2 bachelors and 2 widows
f includes 1 bachelor and 7 widows
g includes 3 bachelors and 5 widows
h includes 1 bachelor and 9 widows

\+ The bachelors and widows in this column are also included in the respective columns for bachelors and widows.

However, taken together these various sources form the only available body of evidence for an occupational analysis of March between 1550-1750.

4.3 Limitations of the evidence

Care needs to be taken when making an analysis of the occupational structure of any early modern community, especially when viewed from twentieth century experience. The problems of all the source materials are compounded by the occupational designation used in the records themselves. For example, it is often impossible to know whether for example, a fisherman was in fact a man of substantial wealth or a poorer man making a scant living, unless the will or probate inventory survives.[36] Even in the cases where the evidence appears to be unambiguous, different sources reveal that other activities were often undertaken by the same man.

While some individuals were occasionally given multiple labels, there was a general bias towards a single label for occupational designations. The only exceptions to this were noticeable with retail tradesmen in the late seventeenth and early eighteenth centuries, when some individuals were given two or three slightly different occupational labels during their lifetime, usually suggestive of the increasing retail wealth of the individuals concerned. Such as John Wells, who was described as a shopkeeper, grocer and mercer over a period of 15 years.[37]

Furthermore, particular economic categories which were used by contemporary scholars are absent from the data source available for March. Perhaps the most striking omission is that of cottagers, who appear in the tables of both King and Colquhoun. These most likely were present in March, and were possibly viewed as either husbandmen or labourers by the parish clerk. Another elusive class, especially considering the urbanized growth of March were those responsible for its development. Although some merchants and manufacturers were identified, many of those responsible for the urbanized development of March may well have been hidden in the social status of 'Gentlemen', 'Esquire', and 'Mr',[38] or underneath the trade names they shared with their employees such as boatwright, cabinetmaker and tailor.

The poor are also an elusive class, in that there are no extant listings which provided a record of their occupations.[39] It is feasible to suppose that many of the poor were involved in some of the seasonal employments offered by the by-products of the fen such as picking rushes or sedges, collecting the opium poppy heads, picking wool, spinning or knitting, or in the intermittent employment offered by the officers of the town.[40] While all of these occupations, required little skill or training, they where subject to economic dislocation.

Within all of the documentary sources used in this study, women were mainly identified by marital status, or their husbands' names. The clerks apparently considered this a more valid form of identification than an occupation. This, taken at first value might suggest that women did not contribute to the economic running of the household. Yet although the parochial registration system never admitted that women had occupations, it is evident from the churchwardens accounts[41] as well as from some wills[42] that women had gainful, if only intermittent, employment of some description,[43] but the precise contribution they made to the economic life of the community is shrouded in obscurity.

Very few occupations of any description were recorded in the sixteenth and early seventeenth centuries with the exception of fishermen and husbandmen. As the data for these periods rest mainly upon the use of the extraneous sources, there is a bias against non-will makers. There is also an over-representation of the occupations peculiar to visitation records and churchwardens accounts, in particular schoolteachers and fishermen respectively.[44] Hence, using more than one source for occupational information probably means that the results presented in this chapter include some bias. In addition, since this study is based upon the linkage of all sources supplying occupational information to the family reconstitution it ignores all single inhabitants, while not all married couples appeared in the parochial registration system. To sum up, the occupational structure of March, includes only a proportion of the population and is centred upon the adult male who had cause to follow the rites of the established church and be in evidence long enough to be entered on an family reconstitution form.

In order to use occupational labels as clues about the economic and social structure of March they need to be interpreted. Whether or not the clerks or scribes used the occupational labels consistently over time is open to question. It is more than likely that the passage of time brought subtle and unannounced changes in the definition of certain occupational terms, confounding attempts to interpret apparent changes. Parish clerks may have used the labels differently from, for example, will scribes or churchwardens. Moreover, none of the records shed light on the nature of the work undertaken or on the respect and rights that went with each label. Literary evidence indicates that persons with one label often had many occupations, both in a single year but more especially over their adult lives. Weavers farmed and farmers wove in unknown proportions. Others exploited the resources offered by the fen, which albeit a seasonal employment, was an important aspect of the fen economy. This type of seasonal occupation, which fails to to be picked up in single label occupational data will be pursued further in the discussion on marriage seasonality.[45]

4.4 Occupational classifications

The range of occupations pursued in March was too large for any occupation to be investigated individually. Moreover, there were too few followers of any one occupation for any individual occupation to be made the basis of this analysis. Hence to use the data effectively it was necessary to introduce a classification system, in which similar types of occupation were grouped together.

The many classifications of occupational data for early modern England are usually based on the nineteenth century censuses. A general classification might distinguish between,

i) Non-productive occupations (profession or service)

ii) Exploitive occupations (agriculture, fishing)

iii) Processing (crafts and industries)

iv) Distribution (Trades)[46]

The problem with this type of simple classification is that it makes no distinction between the employer and the employed, such as farmers and farm labourers. The domestic character of the economy of pre-industrial England also meant that many workers were not only manufacturers but also retailers. Thus, the attempt to distinguish between crafts and trades is not particularly valid for early modern English society.

However, some attempts have been made to circumvent the anomalies in the more simplistic models of occupational classifications.[47] Some classifications take the social status of the individual within his community into account[48] especially when dealing with rural populations, since the terms gentlemen, Mr, or esquire singled out farmers and others of considerable relative wealth. While this was the case for sixteeneth and early seventeenth century March, it is noticeable from the wills that these status designations increasingly came to describe the traditional ‘capitalists’ such as manufacturers and master craftsmen during the seventeenth and eighteenth centuries.

However, any twentieth century attempt use early modern contemporary literature to to look at occupational grouping which takes account of social status flounders through lack of evidence, for unless an occupation is particularly mentioned in a specific category in the social hierarchy it cannot be ranked with certainty. Our view of the distinctions between the various trades derives solely from our own ability to interpret the social structure of past times and care needs to be taken when making an analysis of the occupational structure of early modern England, when viewed from twentieth century experience, since our own values can, and do intrude. To quote Patten, ‘any system of occupational classification is fraught with problems and inevitably certain occupations can be placed in more than one category’.[49] Consequently, any description of an individual purely by his social standing within the community was ignored as regards this occupational analysis of March.

The classification of the variety of the occupational data for March was a daunting exercise but a system was eventually drawn up that gave a sharper focus on the economic sectors of the economy as opposed to social status. The occupations identified in March were grouped into broad categories based upon a modified version of the classification devised by Armstrong,[50] distinguishing between agricultural and non-agricultural occupations.

The occupational composition of March was compared over fifty year periods from the mid-sixteenth to the mid-eighteenth centuries. Despite the obvious biases involved in such an approach, it nevertheless enabled broad differences within the occupational composition of March to be identified between 1550-1749.(Table 4.4)

Table 4.4 Occupational analysis of March, 1550-1750.

Category	1550-99		1600-49		1650-99		1700-49	
	No	%	No	%	No	%	No	%
Agriculture	28	38	47	39	49	34	66	26
Fishing	24	32	17	14	1	1	2	1
Building	0	0	2	2	12	8	12	5
Food & Drink	3	4	6	5	15	10	25	10
Cloth & House	2	3	6	5	9	6	25	10
Manufacturing	4	5	9	8	10	7	8	3
Public Service	1	1	2	2	9	6	15	6
Transport	0	0	3	3	4	3	5	2
Service	0	0	0	0	0	0	11	4
Unskilled	12	16	27	23	35	24	83	33
Total	74		119		144		252	

From Table 4.4 it is evident that agriculture was the largest occupational category in the sixteenth and seventeenth century, accounting for more than a third of all recovered occupations. It declined slightly in the early eighteenth century, but still accounted for more than a quarter of all recovered occupations. Fishing, which accounted for 32% of all recovered occupations in the sixteenth century, declined drastically after drainage, although there is literary evidence to show that the fens continued to export fish and possibly fowl not only to the local and regional markets but also to the national ones.[51]

The production and retailing of food and drink, as well as clothing and household goods steadily increased in importance, accounting for 20% of all recovered occupations in the eighteenth century. Manufacturing remained relatively unchanged in the seventeenth century, whilst building accounted for 8% of all recovered occupations for the latter half of the seventeenth century, immediately after the great drainage schemes were beginning to take effect. The transport sectors remained fairly constant from the beginning of the seventeenth century. However, the public service category increased sharply in the latter half of the seventeenth century, whilst the service category had no recovered occupations before the eighteenth century.

Whilst the overall change in the non-agricultural categories is suggestive of a growing urban system, the change was not that dramatic. Although, it is natural to argue that a higher density of settlement would bring about a rise in the commercial occupations and a corresponding reduction in agricultural ones, agriculture still accounted for 26% of all recovered occupations in the eighteenth century.

So was the change in the occupational structure due solely to a growing rural population or was it the beginning of the urbanization process for March? In order to answer this satisfactorily, it was necessary to look at the individual occupations that comprised each category. (Table 4.5)

Table 4.5 Occupational listing of recovered occupations for March by fifty year periods.

Category	1550-99	1600-49	1650-99	1700-49	Total
Agriculture					
Dairyman	0	0	1	31	32
Drover	0	0	2	1	3
Farmer	0	0	5	16	21
Grasier	0	1	1	2	4
Hedger	0	0	0	1	1
Husbandman	4	18	22	9	63
Shepherd	0	0	0	1	1
Yeoman	24	28	18	5	75
Building					
Bricklayer	0	0	1	1	2
Carpenter	0	2	7	4	13
Glazier	0	0	2	4	6
Mason	0	0	1	3	4
Thatcher	0	0	1	0	1
Fishing					
Fisherman	24	17	1	2	31
Production and retailing of food and drink					
Alekeeper	0	0	0	2	2
Baker	1	1	3	6	11
Brewer	0	1	0	0	1
Butcher	0	1	5	6	12
Grocer	0	0	1	1	2
Haberdasher	0	0	1	0	1
Innholder	0	0	1	2	3

Innkeeper	0	0	1	1	2
Mercer	1	1	2	1	5
Miller	1	2	1	1	5
Shopkeeper	0	0	0	4	4
Victualler	0	0	0	1	1

Production and retailing of clothing and household goods

Cabinetmaker	0	0	0	1	1
Chairmaker	0	0	1	0	1
Draper	0	0	0	1	1
Cordwainer	0	0	0	4	4
Glover	0	0	0	2	2
Merchant	0	0	0	1	1
Tailor	2	4	2	0	18
Weaver	0	2	6	4	12
Woolcomber	0	0	0	2	2

Manufacturing

Blacksmith	0	1	4	3	8
Boatwright	2	4	1	0	7
Cooper	0	0	0	1	1
Netmaker	1	4	1	1	7
Tanner	0	0	2	0	2
Turner	1	0	1	0	2
Wheelwright	0	0	0	2	2
Whitesmith	0	0	0	1	1
Whittawer	0	0	1	0	1

Public service and professional

Apothecary	0	0	0	1	1
Bonesetter	0	0	0	1	1
Clerk	0	1	5	6	12
Curate	1	1	1	2	5
Doctor	0	0	1	1	2
Excise Officer	0	0	0	1	1

Sexton	0	0	1	1	2
Schoolteacher	0	0	1	1	2
Surgeon	0	0	0	1	1
Transport					
Ferryman	0	2	1	0	3
Waterman	0	1	3	5	9
Service					
Barber	0	0	0	6	6
Barber/Peruke-maker		0	0	1	1
Fellmonger	0	0	0	2	2
Peruke-maker	0	0	0	2	2
Unskilled					
Labourer	12	25	31	46	114
Poor Labourer	0	2	4	37	43

Source: Family reconstitution

From Table 4.5 it is particularly interesting to note that the occupations making up the agricultural category substantially altered between the late seventeenth and early eighteenth century.

Prior to drainage the agricultural category comprised only yeomen and husbandmen, with the exception of one grasier. However, after the great drainage schemes of the mid-seventeenth century, the generic terms of husbandmen and yeomen were largely replaced by the more specific terms of farmer, shepherd, drover, hedger and dairyman. This is indicative of the changing nature of March. When the area was essentially rural the occupational status of yeoman and husbandman appear to have sufficed to distinguish one sector of farming from another. However, as the community became more economically diverse the use of generic terminology declined. Whether the relative decline of yeomen and husbandmen was purely semantic or reflected a real change in the economy is difficult to establish. Dairying seemed to play a large role in the economy of the community after drainage. Prior to the drainage, when all were dairying to some extent, it was most likely hidden under the umbrella of the terms 'yeomen' or 'husbandmen'. This situation is suggestive of economic change, if not economic growth, with the community of March changing from a rural populace to an urbanized one.

As March grew in size, so to did the breadth of its occupational structure in the various documentary sources. Not only did March boast butchers and bakers, but also occupations based on the production and retailing of diverse finished manufactured products, products which are usually the most responsive to a greater urban demand.

Rural industries in the fens were increasing in importance, particularly in those areas where an excessive population did not have access to adequate supplies of arable land. However, the proletarianisation of the labour force affected the survival and growth of families in more ways than can be discussed by looking at occupational labels alone.

The effects of Vermuyden's drainage schemes are evident with fishermen, netmaker and boatwright rarely in existence amongst the recovered occupations from 1650, while the numbers of watermen steadily increased in the recovered occupations from the mid-seventeenth century. These changes are suggestive of a change in the occupational composition of March due to the drainage schemes. Prior to drainage these occupations were common occupations. However, after the economic change in the community brought about by the drainage schemes these occupations were only carried out by a few individuals.

While watermen increased in numbers there was a decline in the overall size, but not quantity, of the traffic along the water-front. In the mid-sixteenth century March was a minor inland port with vessels capable of carrying coal very much in evidence.[52] As the degree of silting increased, the physical size of the traffic along the water-front altered.[53] However, the commercial traffic along the waterfront remained and this attracted retailers. These retailers may have been particularly drawn to the market, which March was granted the right to hold in 1670.

The numbers of butchers and bakers, a sign of growing urbanisation, made up approximately half of the recovered food and drink sector in March during the late seventeenth and early eighteenth century.

The first glazier in the occupational analysis of March was in the late seventeenth century. However, a glazier was in evidence during the late sixteenth century,[54] although he could not be linked into the reconstitution.

Labourers were put into one category since there was no indication as to whether they were agricultural or non-agricultural labourers. During the early eighteenth century, the occupational structure of March was dominated by the unskilled sector, which employed 33% of all the recovered occupations in contrast to only 16% in the mid-sixteenth century.

Moreover, while the parochial registration system occasionally gave the occupational designation as 'poor labourer', the label 'poor' was never applied to anyone with a named trade. Here, the occupational distinction seems to have had a clear economic meaning, which would lead one to suggest that persons with a given occupation were likely to be more wealthy.

These major differences in the occupational composition of March between 1550-1750 reflects the process of urbanisation that was taking place. This change continued and by the mid-nineteenth century March had expanded still further.

4.5 Occupations in 1851

An occupational breakdown for March based on the 1851 census can be used as a benchmark against which to discuss the changing role of March from a rural community to an urbanised one.

In order to ensure maximum comparability between the mid-nineteenth century census data and the occupational evidence from the family reconstitution forms, only the occupations relating to the heads of household were tabulated. (Table 4.6)

Table 4.6 Occupational analysis of heads of household for March 1851.

Category	1851		1851 (excluding railway)	
	No	%	No	%
Agriculture[a]	67	7.8	67	13.1
Fishing	1	0.1	1	0.2
Building	69	8.0	69	13.5
Food and Drink	54	6.3	54	10.5
Clothing & household goods	47	5.5	47	9.2
Manufacturing	34	4.0	34	6.6
Public service & Prof	29	3.4	29	5.7
Transport[b]	78	9.1	9	1.8
Seervice	9	1.1	9	1.8
Unskilled[c]	473	54.9	194	37.8
Total	861	100.2[d]	513	100.2[d]

Source: 1851 Cenus for March

Notes: a This category comprises 66 farmers and 1 shepherd.

b This category comprises 69 railway workers and 9 ferrymen.

c This category comprises 194 agricultural labourers and 279 railway labourers.

d This small discrepancy is due to rounding errors

The overall impression of the occupational structure of March in 1851 is of a growth in the non-agricultural occupations from the mid-eighteenth century to the mid-nineteenth century. The numbers employed by the railways is particularly striking since the first line was not opened until 1846.[55]

By 1851, 55% of the heads of households were engaged in unskilled labour. Of these labourers, 194 (41%) were employed in agriculture, while 279 (59%) were engaged by the railway authorities. Hence the total number of heads of household involved in agriculture and the railway were 260 (30%) and 354 (40%) respectively.

Even when those employed on the railway are excluded from the analysis of the 1851 census, it is evident that the occupational composition of March is suggestive of the change evident between the mid-sixteenth to the mid-eighteenth centuries continuing into the succeeding century. However, more than just the occupational structure of March from the data evident in the family reconstitution needs to be considered.

4.6 Seasonal employment

Due to the nature of the fenland economy it would be unwise to look at how the inhabitants of March earned a living, by purely counting occupational labels.[56] For even if the potential earnings of the various occupational groups could be assessed, such an approach would neglect the many alternative sources of income that could be obtained from any intermittent or seasonal employment.[57] As Patten has argued it 'is the economic behaviour of the individuals which must be examined and then aggregated in much greater detail [in order] to obtain a true picture and better interpretation of [the] occupational structures'.[58]

Although it is useful to know the occupational structure of March, a local study such as this should seek to take the analysis a stage further. In fact, the occupational structure of March was far more complicated than this study has so far suggested. Most studies of the occupational structure of local communities have accepted the validity of the occupational labels used. However, this approach tends to lead to an acceptance of vague terminology that gives little insight into the realistic economic behaviour of the individuals concerned.[59]

The size of the 'surplus army of labour' as a result of population growth is of crucial importance. This group was generally to be found in the peripheral occupations of a changing economy. Hence, this group benefited from the cyclical and/or seasonal employment when labour demands peaked.

Apart from the occupations evident in this analysis, there would have been numerous semi-skilled and unskilled jobs intrinsic to a minor port, such as the loading, unloading and washing of vessels,[60] whilst the building and rebuilding of the drainage system of the Isle required both skilled and unskilled labour. In addition, there would also have been seasonal employment in the work generated by the harvesting of the fenland by-products.[61] The rise of local industries based on the fenland by-products was most likely determined by the social and economic circumstances of the inhabitants in March. Some of the wills for March demonstrate the fragmentation of small landholdings as a result of partible inheritance.[62] If this was the case, then the landholding would eventually become so small that the tenants would have been hard pressed to maintain a living. However, in the Isle communities, the commons were large and common rights included not only grazing rights, but allotments of peat, sedge, willow, and the right to catch fish and fowl. Hence the fen resources could augment the family income, and as the population increased, it can be readily seen that these fen products would have provided a by-employment in many households. The rise of the local rural industries based upon the fenland by-products may well have eventually become the main employment within the household, especially as the locally manufactured articles, as well as the 'harvesting' of fish and fowl were not only for local consumption, but also for more distant markets.[63]

It may well be that there is enough positive evidence here to support the suggestion that rural industry can be associated with a particular type of farming community. However, due to the nature of the documentary sources used in this occupational analysis of March, the numerical size of the 'surplus army of labour' that was able to obtain intermittent or seasonal employment and those that had more than one employment can only be guessed at.

4.7 Conclusion

In this study, the occupational analysis of early modern March is based upon the linkage of all sources supplying occupational information with the family reconstitution. Hence the families in this occupational study comprise only a part of those evident in the full reconstitution, and its demographic characteristics may not be representative of the total population in March during the research period. The occupational sample of the late sixteenth and early seventeenth centuries may well be biased towards occupations involving an immobile capital investment, for example, yeoman and farmers, who had an inherited family holding, and the more traditional fenland occupations such as fishermen and boatwright.

Reconstructing the population that was employed is fraught with pitfalls. While documentation made it abundantly clear that women produced saleable commodities and contributed to the living standard within the household, the parish clerks apparently vitiated the usefulness of occupational labels in identifying women, with the exception of Agnes Black the midwife. It was only for men that the variety of occupations was in evidence. Indeed, the clerks seemed to have felt that for men occupations were more revealing than marital status, for while the registers are full of wives and children, they show very few husbands. Hence socio-economic labels crowded out not only marital labels but also poverty status.

The sources used here to delineate the occupational structure of early modern March, are no better, or worse, than the census data in getting behind the single occupational labels to explore what people really did. It can only be hoped that these findings stimulate further research into the occupational structure of the 'drowned' economies.

Nonetheless, this chapter has demonstrated two simple yet important facts. Firstly, it is unwise to look at the means by which individuals in a fenland economy earned a living by purely counting occupational labels, and secondly, that the number and variety of non-agricultural occupations increased over the period 1550-1749. This increase in the non-agricultural occupations could only have been hastened by the developments of the drainage works of fenland Cambridgeshire. Furthermore, underlying this slow process of urbanisation, was the growth of population which intensified the demand for essential consumer goods.

The changing occupational structure of March during the period 1550-1750 was dependant upon such external influences as its decline as a minor port, the degree and depth of the frequent inundations, the state of the drainage systems, and Marchs' changing role from a rural to an urban community. By the later sixteenth century, March had already begun to grow, albeit with limited urban functions, with the marriage seasonality patterns, as we shall see later, also implying economic change.

References

1. Clarkson (1971) p78

2. For a discussion of occupational heterogenity in the fourteenth century see Britnell, thesis (1969) pp154-7 and Raistrick, (1929) pp241-9

3. See Chapter 2 for a full discussion of the paucity of information in the English parish registers. For the coverage of occupational data in the nineteenth century censuses see Armstrong (1966); Armstrong (1972) and Lawton (ed) (1978).

4. William Harrison's table of 1577

5. Kings table for 1688

6. Joseph Massie's table for 1750 in Mathias (1957) pp30-45, especially p36

7. See Patrick Colquhoun's table for 1801-1803 in Colquohoun (1806).

8. Barnett (1936) p13. Also see Holmes (1977) pp41-68 and Glass (1965) p159-220

9. Colquhoun (1806) p25

10. See Lindert & Williamson (1983) and Lindert & Williamson (1982)

11. Wrigley, (1977B)

12. See Patten (1979) and Patten (1975) for a discussion of the changing occupational structure in East Anglia

13. Hill (1967) p347

14. Soltow (1968) p347

15. The censuses of 1801-1821 give no breakdown by occupation. The 1831 census is moderately helpful as regards occupational detail in that males over 20 years were classified in seven occupational categories agriculture, industrial labourers, manufacturing, professional, retail trades, servants and others. However, by 1851, there was greater detailed occupational information.

16. Of the numerous listings at the Cambridge Group, less than ten percent include occupational details of an adequate standard for any detailed study. For a note of the number of listings see Wall (1987)

17. This lists occupations for most of the civilian males between 15-60 in Buckinghamshire.

18. Bishop LLoyd made a survey of the parish of Eccleshall, Staffordshire, in 1693-8 in which occupations are included.

19. Cardington, Bedfordshire in 1782

20. Corfe Castle, Dorset in 1790.

21. Craftsmen and tradesmen were unable to operate within a town unless they became freemen of that town. See Hibbard, thesis (1981); Patten (1977) pp296-313 and Pound (1976).

22. The only references to apprentices were infrequent entries in the churchwardens accounts. (CRO P/116/28/20). March which was a noncorporate town, was only granted a market charter in 1670.

23. See for example Wrigley (1977B) and Levine, thesis (1979). Wrigley's work on the reconstituted families of Colyton produced a occupational study based on the vital registration events for 1609-12, 1765-79, and 1813-19, coupled with the use of later census data. While Levine's

work on Shepshed, Bottesford, and Terling produced a limited occupational study.

24. Recent occupational analyses, such as those by Patten (1979); Patten (1977) and Patten (1975) tend to rely on the use of one source only. This study was carried out on a regional scale as the data contained in the wills proved to be insufficient for a detailed study of one community.

25. These called for the economic and marital status to be attributed to individuals within the parochial registration system.

26. This was especially the case for the families bearing the surname of Coward, Shepherd or Walsham. (See Chapter 2)

27. See HK2799-HK2808. These sources were consulted from 1550-1780 in order to abstract occupational data for those FRF's formed in the mid-eighteenth century.

28. HK2799-HK2808. A few administration bonds survive within the will data.

29. HK2799-HK2808. Probate inventories only survive for a proportion of the wills.

30. CRO P/116/28/20

31. See Owen (1971) pp7-17 for a listing of the visitation returns for the Diocese of Ely.

32. See Beresford (1963)

33. See for example Cornwall (1965)

34. PRO C213/76. Also see Webb (1983) pp120-123 for a list of all surviving oath rolls. The Association Oath Rolls of 1695 record loyalty to Wiliam and Mary. Although the Act stated that all office holders were to sign, the oath rolls

were open for all to sign and in some places, the defaulters names were also given. The coverage of these rolls in the county of Cambridgeshire, including the Isle vary considerably. The roll for the upland of the county comprises the individual parish returns and could be used as a guide to the levels of literacy since it gives not only signatures but also the marks of those unable to write. However, the Isle of Ely roll differs from the rest of the county in that parishes are not specified and the names of individuals appear as one long list. There is no evidence of anyone marking as oppossed to signing. Furthermore, the handwriting on the whole roll is similar. Consequently, it would appear that this is either a fair copy of all the names (signed and marked) or a list of only part of the adult population of the Isle of Ely.

35. An addition is a phrase appended to a persons name in legal documents. See Galenson (1981) p45

36. For example, some fishermen in March were particularly wealthy in that the hire of the 'Comin watter the 15th daye of apprelle in the rayne of our sofrayne Lord King Henry the 8th 35th yer for £6.3.4 yearly' which had increased to a yearly rent of £14.00.00 by 1577. (CRO P116/28/20) This amount was paid for by an individual who then leased out fishing rights. Hence there was an hierarchy in fishing.

37. See for example family reconstitution form 13253. John Wells was described on three various occasions in the parochial registration events as Mercer, and once as 'Mr', yet his will described him as a shopkeeper while the probate inventory decribed him as a grocer but gave him the title of 'Mr'.

38. Family reconstitution form 13253.

39. CRO R50/10/1 The only listing of the poor found was for April 1751 when the legacy of the late Revd Mr Vyner Snell was shared out between the poor of Doddington, Wimblington,

March and Benwick when 30,31, 91 and 7 individuals respectively received various sums of money respectively ranging from 1/6 to 5/-. However, a reference in the churchwarden's accounts refer to a listing of the poor drawn up in 1678 by the order of Esquire Jennins.

40. Such as Thomas Thompson who was paid for sweeping up the dead leaves in the churchyard, or Edward Grigson, who was given 2d 'for helping Maria Gibson to remove her things when she flitted' in 1661.

41. Paid to Sam's wife for collecting in West fen 6s 8d (1552) Paid to William Cawthorne his wife for making ye surplus (1556) Paid to Mother Armeri for keeping of Mr. Southold fower weeks.(1577 CRO P/116/28/20

42. The only female occupation recovered likely to have been exercised on a long-term basis was that of Agnes Black, who was the midwife in March at her death in 1697. FRF 13564

43. There is an infinite literary evidence on womens employment as well as the quantitative data from such rare sources as the list of inhabitants for Corfe castle, Dorset in 1790, and Cardington, in Bedfordshire for 1782. Davies (1795) and Eden (1797) vols 2,3 comments on womens work and earnings in poor families.

44. The visitation returns were the only data source which gave the two schoolmasters in March, while the churchwardens accounts specify many fishermen in the late sixteenth century when they had cause to pay rent for the use of 'the common water'.

45. See chapter 7, for a detailed discussion of this point.

46. Rogers (1977) p99

47. See for example Armstrong (1966). A number of classifications are discussed in the appendices of Mills, (undated).

48. See for example the classification devised by Mills in D281. Also see Patten (1977) and the printout of Anderson's occupational information from census of 1851 based on Booth and Armstrong's work held at the Cambridge Group for the History of Population and Social Structure.

49. Patten (1977) p311

50. See Armstrong (1972) pp191-253

51. Defoe (1724)

52. Dugdale (1662)

53. See Willan (1946) for a discussion of this point.

54. See CRO P/116/28/20 for the surviving Churchwardens accounts

55. VCH Vol 4

56. This point is discussed further in chapter 7.

57. See for example, Ravensdale (1974); Spufford (1974); Patten (1977) p301-2; Jack (1977) p45-6 and chapter 7.

58. Patten (1977) p311

59. For example Glass was forced to accept unhelpful labels regarding status and occupations. See Glass (1965) pp224-5

60. This particular employment was let to Thomas Scotwell by the Churchwardens in 1593 with the proviso that his maximum charge per vessel would be no more than 2d.

61. The willows and sallows growing in Many fields was let to Thomas Browne for 12 shillings a year in 1586

62. For a discussion on the increasing degree of partible inheritance evident in the Isle of Ely manors of the Bishops' of Ely between 1221-1251, see Hallam (1958) p344-9. Partible inheritance is in evidence in March in the second half of the sixteenth century, and from the mid-seventeenth to the mid-eighteenth century. There is also some partible inheritance in the wills of the first half of the seventeenth century although there is greater evidence for impartible inheritance customs.

63. See Childers (1868) who edited the log of Lord Orford's voyage around the fens in 1774. This account also includes the journal of Mr Thomas Roberts and George Farrington, both volunteers on board the boat of Lord Orford, Admiral of the Fleet.

Chapter 5

Trends in infant mortality

5.1 Introduction

In early modern England life under the age of one and to a lesser extent under the age of five was extremely hazardous.[1] Of each new birth cohort, more than fifteen percent died before their first birthday, while more than fifty percent of those alive at one failed to survive beyond their fifth birthday. After the age of five mortality rates declined with less than a quarter of those celebrating their fifth birthday dying by 20, while of those who attained 20, almost half survived to their fifth decade.[2] This ever constant presence of death for the early modern family is in stark contrast to present day England where over ninety percent of each birth cohort survive beyond their fifth decade. However, not only was the average life expectancy in pre-industrial England, if compared with that of the present day, much shorter, but as Flinn has stated one outstanding feature of pre-industrial mortality was its instability.[3]

Many factors had a bearing on pre-industrial infant and child mortality rates. In the short term bad harvests, epidemic diseases and the weather exerted a large influence, in the long term, the density of settlement, the degree of urbanisation, and the general economic circumstances all played a part. In various combinations, the interplay of these diverse factors produced very different levels of mortality, not only between parishes in various parts of the country at corresponding periods, but also within the same parish over a period of time.

The aim of this chapter is to assess how the infant and child mortality levels within March from 1550-1749 compared with the national pattern. This includes an assessment of the reconstitution data as well as a discussion of some of the physiological and environmental factors that influenced infant and child mortality levels. Information on infant mortality in March was derived from the family reconstitution which enabled comparison both over time and with other parishes to be made. In addition, relating the data to model life tables enabled life expectation to be estimated for both infants and children.

5.2 Trends Over Time

In order to discuss the infant and child mortality rates in early modern England over time it is necessary to consider the general pattern of infant and child mortality for various communities from the mid-sixteenth to the mid-eighteenth century. For any comparison over time, family reconstitution studies provide evidence of overall infant and child mortality levels at various periods within pre-industrial England.[4] Table 5.1 summarises the mortality rates for both males and females in eight reconstituted parishes for the ages 0, 1-4, and 5-9, for each half century from 1550-1749 inclusive.[5]

Table 5.1 Infant and child mortality rates ($1000q^{x}$), 1550-1749

	Male			
	1550-99	1600-49	1650-99	1700-49
Infants				
Aldenham	130	119	112	153
Banbury	172	165	171	250
Colyton	140	91	104	110
Gainsborough	175	243	255	284
Hartland	89	100	96	85
Terling	134	113	135	139
Willingham	152	182	186	170
March	287	157	358	263
Mean	152	141	169	173
Children 1-4				
Aldenham	73	74	56	60
Banbury	77	115	121	131
Colyton	82	78	110	67
Gainsborough	95	117	178	197
Hartland	39	42	43	72
Terling	65	122	103	68
Willingham	82	95	155	167
March	135	130	218	144
Mean	79	96	113	109
Children 5-9				
Aldenham	22	29	30	57
Banbury	46	46	36	33
Colyton	33	26	54	23
Gainsborough	31	62	61	82
Hartland	30	21	29	22
Terling	48	50	25	39
Willingham	9	35	73	35
March	71	40	119	68
Mean	34	40	51	43

	Female			
	1550-99	1600-49	1650-99	1700-49
Infants				
Aldenham	125	112	97	137
Banbury	137	149	139	225
Colyton	118	89	100	106
Gainsborough	157	204	221	245
Hartland	95	70	66	75
Terling	118	110	145	170
Willingham	163	185	224	175
March	242	186	292	244
Mean	137	133	154	166
Children 1-4				
Aldenham	72	58	71	64
Banbury	85	95	121	111
Colyton	63	91	113	77
Gainsborough	109	150	170	163
Hartland	37	56	56	116
Terling	51	77	105	88
Willingham	58	43	123	146
March	79	87	145	163
Mean	68	78	109	110
Children 5-9				
Aldenham	24	34	21	37
Banbury	66	49	33	24
Colyton	16	52	75	41
Gainsborough	25	68	62	56
Hartland	13	39	31	40
Terling	25	37	35	36
Willingham	63	42	51	88
March	73	65	67	108
Mean	36	45	46	53

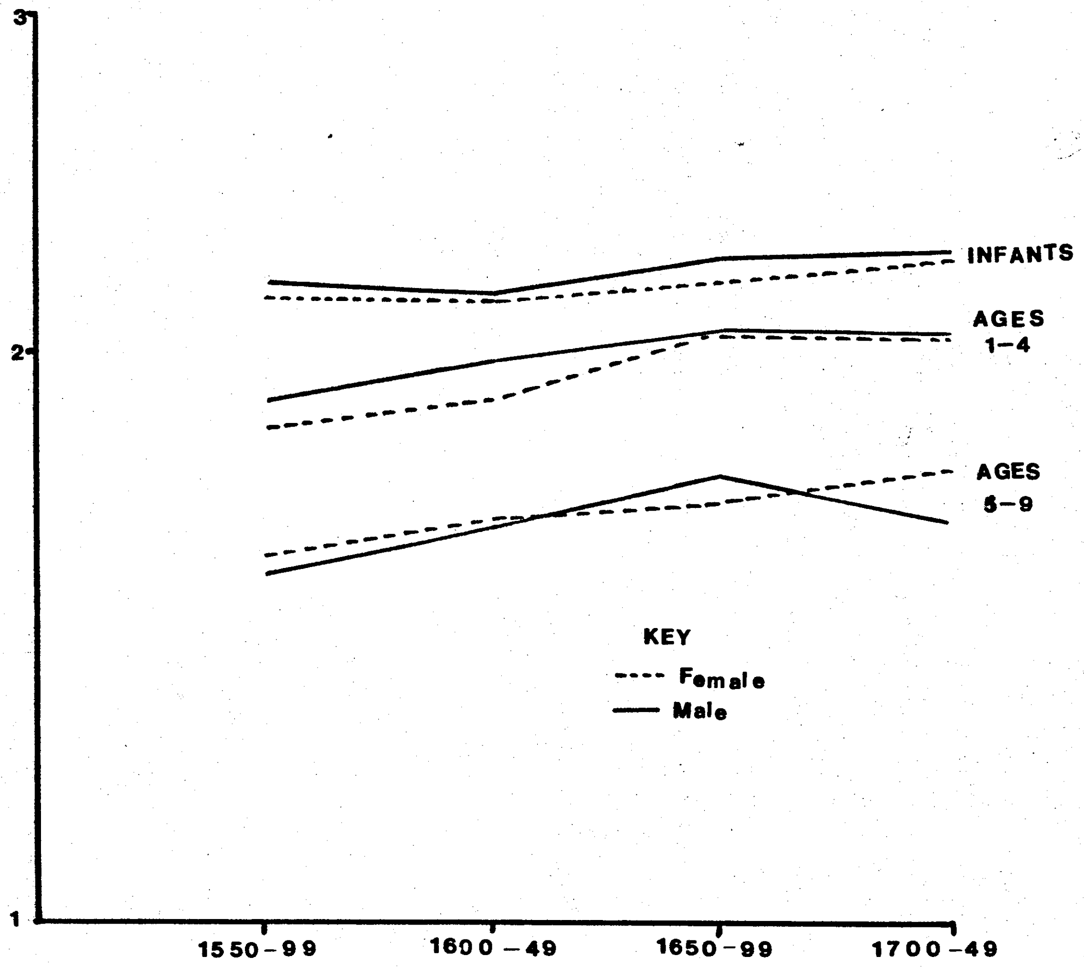
Source: R. M. Smith (1979) Table 8.3. pp210-11
Reconstitution data for March and Willingham.

From these eight reconstitutions it is evident that while early modern England experienced high infant and child mortality rates, marked regional variations were very much in evidence. There was a strong correlation between population density and mortality levels. Urban parishes portrayed higher mortality levels than rural parishes. Market towns, whatever there size, suffered higher mortality rates than neighbouring rural areas, while fen and fen-edge parishes were more unhealthy than the majority of their rural and urban counterparts.[6]

The infant and child mortality levels for March were higher than those for the fen-edge parish of Willingham, suggesting that the deep fen parishes were more unhealthy than those on the fen edge, while the only parish with a higher infant mortality level than March was Gainsborough, which was a much larger and more urbanised settlement.[7]

Also of interest is the degree of change over time in the levels of infant and child mortality in early pre-industrial England for these eight reconstituted parishes. Whereas the mean increased for both infant and child mortality, the relative increase in the mean was higher for child mortality. (Figure 5.1)

Figure 5.1 Trends of male and female infant and child mortality for the means of eight reconstituted parishes 1550-1749



Source: Log tables applied to the means in Table 5.1

Differences between male and female infant mortality rates were also in evidence. In order for the overall trends in sex-specific mortality to be more readily observed the male mortality figures for each community for each fifty year period were taken to be equal to 100. The level of female mortality for each settlememt was then measured in relation to this index. Hence a figure of 78 indicates that female mortality was 22% below male mortality, while a figure of 120 indicates that female mortality was 20% higher than male mortality.

Table 5.2 summarises the sex specific mortality patterns in the eight reconstituted parishes for the ages 0, 1-4 and 5-9 by fifty year cohort periods from 1550-1749.

Table 5.2 Female infant and child mortality as an index of male mortality.

	1550-99	1600-49	1650-99	1700-49
Infants				
Aldenham	96	94	87	90
Banbury	78	90	81	90
Colyton	84	98	96	96
Gainsborough	90	84	87	86
Hartland	107	70	69	86
Terling	88	97	107	122
Willingham	107	102	120	103
March	84	119	82	93
Mean	90	94	91	96
Children 1-4				
Aldenham	99	78	127	107
Banbury	110	83	100	85
Colyton	77	117	103	115
Gainsborough	168	128	96	83
Hartland	95	133	130	161
Terling	79	63	102	129
Willingham	71	45	79	87
March	59	67	67	113
Mean	86	81	95	101
Children 5-9				
Aldenham	109	117	70	65
Banbury	144	107	92	73
Colyton	49	200	139	178
Gainsborough	81	110	102	68
Hartland	43	186	107	182
Terling	52	74	140	92
Willingham	70	120	70	251
March	103	163	56	159
Mean	106	113	90	123

The available data on national patterns regarding infant mortality suggests that male infants were inherently more vunerable than female infants. The parish of Willingham providing the outstanding exception to this general feature, where female infant mortality was consistently higher than male infant mortality for all periods from 1550-1749.[8]

The overall mean of the mortality index suggests that male child mortality for ages 1-4 was higher than female mortality for corresponding periods until the mid-seventeenth century but generally lower thereafter, particularly in the first half of the eighteenth century. However, within the age group 5-9 this trend was completely reversed, since the overall mean of female mortality regularly exceeded male mortality, with the exception of the second half of the seventeenth century.

The results presented in Tables 5.1 and 5.2 exhibit not only major regional differences but also marked variations within each community from the mid-sixteenth to the mid-eighteenth century. Hence, it is necessary to consider the question of the reliability and representativeness of the data.

5.3 Reliability and representativeness of the data

Many problems arise in the study of infant and child mortality, with the major one undoutably concerning the representativeness of the data. Children at any point in time form a large proportion of the population, hence any defects encountered in their registration would affect the demographic records as a whole.[9]

If there was a great deal of under-registration in evidence, infant death rates would tend to be low relative to those death rates for ages 1-4, while there would be a marked under-registration of infant deaths within the first year of life. The accuracy of the infant and child mortality levels may be tested by considering both the relationship between infant and child mortality and the distribution of deaths within the first year of life. Fortunately the former can be reasonably tested by using regional model life tables,[10] while Bourgeois-Pichat's biometric analysis provides information about the latter.[11]

In order to consider the relationship between infant and child mortality and to gain an insight into both the nature of the changes taking place and the plausibility of the data, regional model life tables were therefore employed. Although model life tables reflect the experience of late nineteenth century western and north-western Europe, they provide the only means by which to assess the expectation of life for early modern England, when the only information available is the mortality rate for a particular age group.

Level 1 in the north regional model life tables represents an expectation of life at birth of 17.5 years for males and 20 years for females, with each level representing an increase of 2.4 or 2.5 years for males and females respectively in the expectation of life. Thus at level 3 the expectation of life at birth was 22.3 years and 25 years for males and females respectively. Hence, low levels in the Coale and Denemy regional model life tables implies high mortality and vice versa.

Coale and Denemy present various 'regional' models and while no model fits perfectly, recent research has shown that infant and child mortality experience in England corresponds closely to the north pattern of mortality.[12]

Table 5.3 summarises the information in Table 5.1 expressed in terms of the levels contained in the north regional model life tables for the eight reconstituted parishes.

Table 5.3 Model life tables corresponding to infant and child mortality rates ($1000q^x$), 1550-1749

Male

	1550-99	1600-49	1650-99	1700-49
Infants				
Aldenham	12	13	14	11
Banbury	9	10	10	5
Colyton	12	16	15	14
Gainsborough	9	6	5	4
Hartland	16	15	15	16
Terling	12	14	12	12
Willingham	11	9	9	10
March	4	11	1	5
Mean	11	12	10	10
Children 1-4				
Aldenham	14	14	16	16
Banbury	14	11	10	10
Colyton	14	14	11	15
Gainsborough	12	11	7	6
Hartland	18	17	17	14
Terling	15	11	12	15
Willingham	14	12	8	7
March	10	10	5	9
Mean	14	12	11	11
Children 5-9				
Aldenham	17	15	15	10
Banbury	11	11	13	14
Colyton	14	16	10	17
Gainsborough	15	9	9	6
Hartland	15	17	15	17
Terling	11	11	16	13
Willingham	21	14	7	14
March	7	13	2	8
Mean	14	13	11	12

	Female			
	1550-99	1600-49	1650-99	1700-49
Infants				
Aldenham	11	12	14	10
Banbury	10	9	10	5
Colyton	12	15	14	13
Gainsborough	9	6	5	4
Hartland	14	16	17	16
Terling	12	12	10	8
Willingham	8	7	5	8
March	4	7	2	4
Mean	10	11	9	8
Children 1-4				
Aldenham	14	15	14	15
Banbury	13	12	10	11
Colyton	15	12	11	14
Gainsborough	11	8	7	7
Hartland	18	16	16	11
Terling	16	14	11	13
Willingham	15	17	10	8
March	14	13	8	7
Mean	14	14	11	11
Children 5-9				
Aldenham	15	14	16	13
Banbury	8	11	14	15
Colyton	18	10	7	12
Gainsborough	15	8	9	10
Hartland	19	12	14	12
Terling	15	13	13	13
Willingham	9	12	10	5
March	7	8	8	3
Mean	13	11	11	10

Source: Model life tables from Denemy and Coale (1983) applied to Table 5.1.

In Table 5.3 the unweighted means of the eight parishes for both sexes are indicative of infant mortality rates being out of line with child mortality in that the expectation of life for infants is generally lower than that to be anticipated from the overall level of child mortality. However, exceptions to this general pattern are evident in some individual parishes. All children aged 1-4 in both Colyton and Hartland experienced a lower expectation of life than was to be anticipated from the levels of infant mortality for 1600-99 and 1700-49 respectively. This characteristic was also replicated in male child mortality levels in Willingham for 1650-99 and in both Terling and March for the first half of the seventeenth century as well as being in evidence in female child mortality for Hartland during the second half of the seventeenth century.

Although infant mortality levels were generally higher than child mortality levels the one puzzling feature of Table 5.3 was the actual change in the respective levels of infant and child mortality for ages 1-4 and 5-9 within each community during the seventeenth century. While infant and child mortality levels generally increased, the rise in infant mortality was far outweighed by the actual rise in child mortality levels within many parishes. For example, while male infant mortality rates in Gainsborough and Colyton rose by one level of the regional model life tables, child mortality for ages 1-4 increased by four and three levels respectively. Furthermore, male child mortality in Colyton for ages 5-9 increased by six levels. Even in March where male infant mortality levels increased by ten levels male child mortality for ages 5-9 rose even moreso.

Smith suggests that this increase in child mortality during the seventeenth century was ‘associated with the drawing of England into closer contact with extra-European areas thereby exposing a population to new kinds of infectious disease [which] may have affected children above the age of weaning relatively more severely than those still fed at the breast’.[13]

While the majority of communities experienced an increase in the levels of infant and child mortality, Aldenham provided the outstanding exception in that both sexes experienced an improvement in their expectation of life at birth and for one period of their childhood. Furthermore, during the seventeenth century, female infants experienced an improvement in their expectation of life in Banbury, while female children aged 5-9 experienced an improved life expectancy in Banbury, Gainsborough and Hartland.

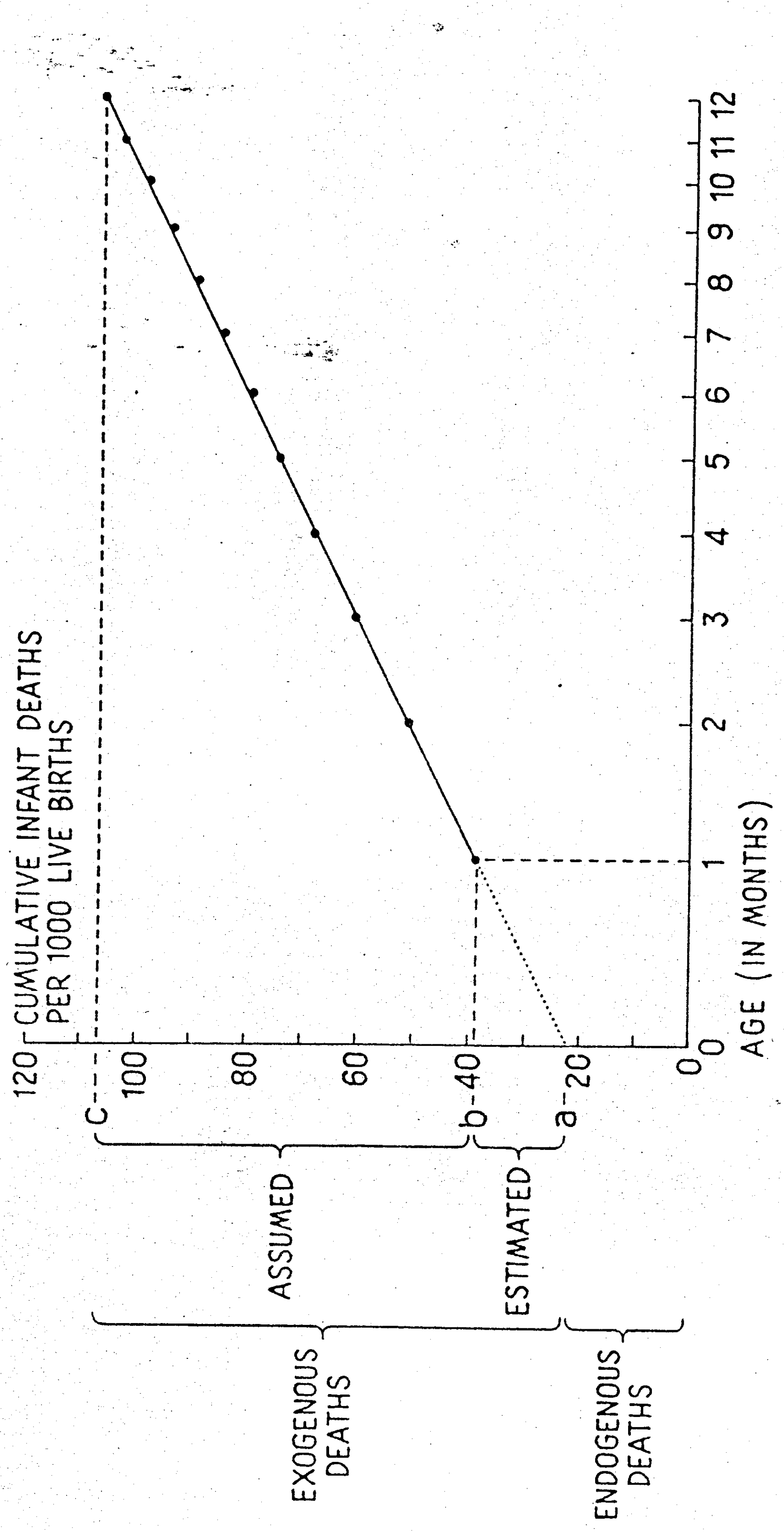
While the actual changes in the respective levels of infant and child mortality were generally puzzling, the change in the respective levels of infant and child mortality within March during the course of the seventeenth century was particularly perplexing.

The infant and child mortality rates in most parishes tended to move up or down by no more than three levels of the north regional model life tables. March, however, was exceptional in that male and female infant mortality moved up by ten and five levels respectively, while child mortality for ages 1-4 moved by five levels in each case. Moreover, male children aged 5-9 in March experienced a substantial rise in their mortality levels while female children in the same age group remained relatively stable until the end of the seventeenth century.

If the rates in Table 5.3 are relatively accurate, especially with regard to March, then early modern England was a period of transistion. However, evidence is needed to support the assertion that these patterns of infant and child mortality are credible. Consequently, the data was subjected to a biometric analysis.

A biometric analysis of infant mortality is only possible when the age at death within the first year of life is known. The purpose of this particular analysis is to attempt to distinguish between the endogenous and exogenous components of infant mortality. While endogenous mortality is that due to cogenitial defects or arising from problems with the delivery, exogenous mortality is held to be the result of external conditions such as disease, improper care, malnutrition or neglect. This analysis rests upon the fact that few, if any endogenous deaths occur beyond the first month of life, and is based upon the empirical discovery that the cumulative total of deaths between the end of the first month and the end of the twelfth month of life approximates to a line of the equation y=mx+c if the scale on the horizontal axis is proportional to $\log^3 (d+1)$, where d is the age in days. By projecting the line of cumulative deaths towards the left until it crosses the vertical axis it is possible to estimate the proportion of endogenous deaths. The interval 'a-b' represents the endogenous mortality, while the interval 'b-c' represents the exogenous rate in the first month of life. (Figure 5.2)

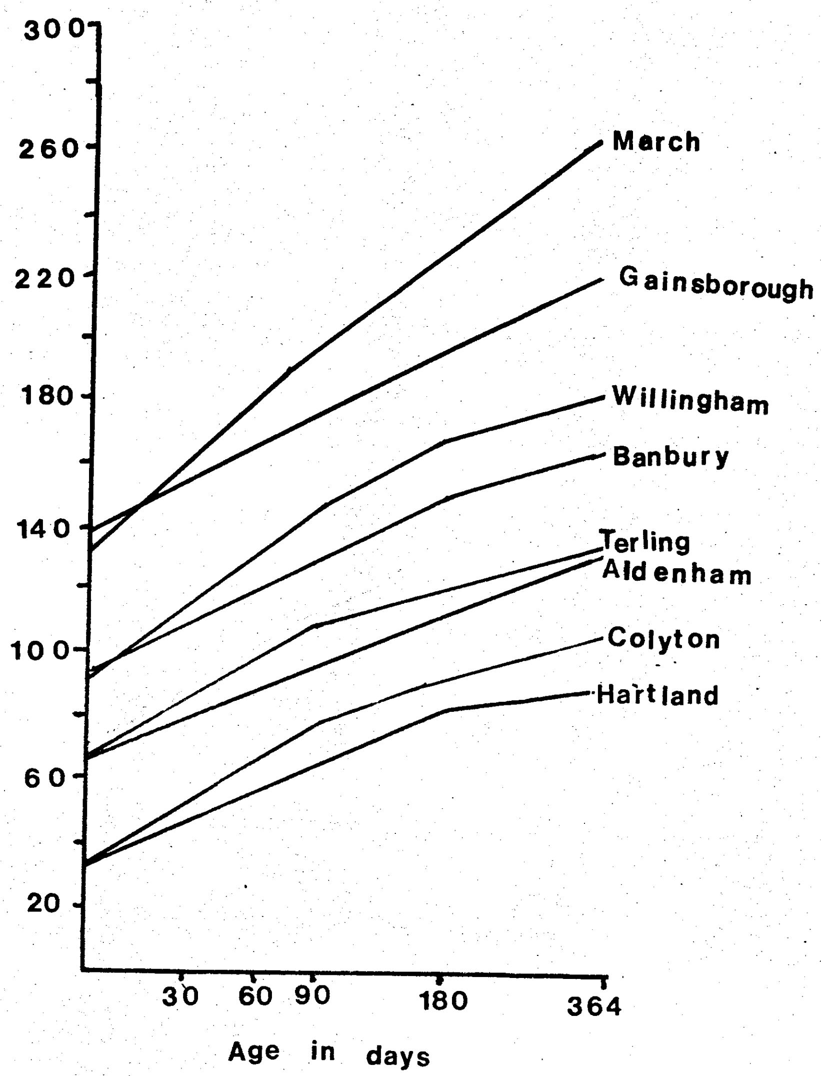
Figure 5.2 Biometric analysis



As is readily obvious, this method has the important quality of showing the endogenous mortality as a residue. Hence if some deaths of children under the age of one had gone unregistered, the endogenous rate would be lowered, although the exogenous rate would remain unaffected. Moreover, if there was serious under-registration of infants it would be possible for the back projection of the line y=mx+c to cut the vertical axis, at, very near or below the origin. So, if many children were dying unbaptised, the endogenous rate would fall to unbelievably low levels, whilst leaving the exogenous rate more or less unaffected.

Figure 5.3 summarises the distribution of deaths within the first year of life for eight reconstituted parishes for the period 1550-1649.

Figure 5.3 Biometric analysis of eight reconstituted parishes, 1550-1649.



Source: Wrigley and Schofield (1979) p76
March and Willingham family reconstitutions.

The most striking aspect of Figure 5.3 is the similarity of the gradients of the curves with the exception of March which indicates that exogenous mortality varied less than endogenous mortality for seven of the eight parishes. This is a remarkable feature given the regional variations and sizes of the settlements. The tendency for the curves to be convex in shape is a frequent aspect of English infant mortality. However, whilst the exogenous mortality rates were so strikingly similar, for the majority of parishes, this was not the case for the levels of endogenous mortality, which varied widely. (Table 5.4)

Table 5.4 Endogenous and exogenous infant mortality rates, 1550-1649.

Parish	Endogenous	Exogenous	Total
Aldenham	76	66	132
Banbury	93	72	165
Colyton	31	76	107
Gainsborough	138	84	222
Hartland	31	59	90
Terling	66	68	134
Willingham	92	85	177
March	126	142	268

Source: Wrigley and Schofield (1979)
Reconstitution data for March and Willingham

The level of variation in the endogenous levels of infant mortality was greater than a factor of 4 between Colyton and Hartland at one extreme and March and Gainsborough at the other, where the rate reached an extraordinarily high level of over 125 per 1000 births. However, while exogenous mortality in Gainsborough was some 40% below the endogenous mortality level, in March the former was some 13% above the latter. With such an excessively high endogenous infant mortality rate for March it is particularly striking that the exogenous rate should be even higher: in fact, the highest of the eight parishes.

While the wide variations evident between the endogenous and exogenous rates for the eight reconstituted parishes in Table 5.4 may seem unusual, there is a great deal of nineteenth century evidence to support the view that endogenous rates as low as twenty per 1,000 were widespread in places with a much higher infant mortality, which was well before medical advances made any progress in reducing endogenous rates.[14]

These results indicate that there was no tendency to under-register infant mortality rates prior to 1650. Had such a tendency existed then endogenous rather than exogenous rates would be depressed. Hence, while the changes in the relative position of infant and child mortality patterns is puzzling as these eight reconstituted parishes for early modern England are concerned, the model regional life tables combined with the evidence from the biometric analysis indicate that this pattern of change was genuine in that the differences are credible.

Since exogenous mortality under the age of one arises from the same range of diseases which would claim victims amongst young children in later years, parishes with relatively high exogenous mortality might be expected to show high death rates in early childhood. Details of the mortality experience of rates up to the age of five are set out in Table 5.5.

Table 5.5 Mortality experience in early childhood, 1650-1749.

Parish	Age 0(ex)[a]	1	2	3	4	1-4	Rank Order 0	1-4
Alcester	79	41	28	16	18	102	4	3
Banbury	72	36	28	28	16	95	6	4
Colyton	76	33	23	18	13	80	5	6
Gainsborough	84	57	33	24	17	122	3	1
Hartland	59	14	13	8	8	43	8	8
Terling	68	33	27	11	15	81	7	5
Willingham	85	35	20	9	11	73	2	7
March	144	46	30	22	17	108	1	2

Source: Wrigley & Schofield (1979)
March & Willingham, reconstitution

Notes: a - This is the exogenous infant mortality rate.

The rank order by parish of exogenous mortality for the ages of 0 and 1-4 shows little variation with the exception of Willingham which had a rank order of two where exogenous infant mortality was concerned but dropped to a rank order of seven for child mortality 1-4. This is particularly striking and is the greatest discrepancy between rank orders in the eight reconstituted parishes.

The only parish with the same ranking in both groups was Hartland, with a rank order of 8, the other parishes generally moving up or down by one or two places. March and Gainsborough, however, exhibited the highest levels of infant and child mortality, being in the first three places in both groups.

The reconstituted community of March exhibits a far higher level of exogenous infant mortality than is evident amongst the other reconstituted parishes while Gainsborough is the only parish with a higher child mortality. Although the infant and child mortality levels are high in March, it does not follow that this pattern was typical of the Isle of Ely as a whole. In order to look at the infant mortality patterns within fenland Cambridgeshire two further communities were examined, with some interesting points emerging.

5.4 Infant mortality levels within the Isle of Ely

A biometric analysis of the vital registration data was calculated for the communities of Doddington and Haddenham, from the inception of their registers to 1750. Whilst the data for March was taken from the reconstitution that for Haddenham and Doddington was abstracted directly from the parish registers.

The data for Haddenham and Doddington was identified by attempting to match all the child and infant burials in the parish registers with the corresponding birth/baptism within the previous twelve months. The description in the burial register as the individual concerned being ‘an infant’ was not in itself taken to be a sufficient identification of an infant since this term was occasionally used to describe children over the age of twelve months.

Any sections of the registers that gave no parental name were excluded from this analysis since to include them would have ‘overstated’ mortality levels as their presence could only be detected through their burials. For a small number of years difficulty arose due to a small minority of children being unnamed. Most of these cases occurred in years showing a general laxity in the recording of full names at both baptism and burial at the beginning of the register, while others were evident in periods with a good detail and may have been unbaptised children being (exceptionally) recorded at burial, sometimes described as ‘an infant’ or ‘a young Child’. These were also excluded from this analysis due to the possibility of erroneous matching.

Once all the burials referring to children had been transcribed, taking into account the above observational rules, a search was made in the baptism register for the twelve months preceeding each burial. If a matching birth/baptism was found, its details were entered, and an age at burial, in days, was calculated. While an infant mortality rate calculated in this way is open to various critiscms, some difficulties such as matching error probably had little overall effect on the data. Furthermore, the risk of erroneous matching for the parish of Haddenham was less than that for Doddington in that both parents were (exceptionally) given for the majority of entries from the early seventeenth century.

However, it may need to be stressed that infant burials found in this manner, are a minimum, either because the birth/baptism of the child was never recorded although the child’s burial was registered or because the birth/baptism was recorded in a register other than that in which the burial was recorded. Hence it is feasible to presume that there are recorded infant burials that cannot be identified due to the absence of a matching baptism record in the same register and which are therefore omitted from the total of recorded infant burials.

Whilst the overall number of events found for both Haddenham and Doddington take no account of any recorded infant burials that cannot be identified due to the absence of a matching baptism record this is not the case for the reconstitution data for March. When using reconstitution data mortality calculations are dependant upon on the linkage of registered events, and on the continued residence of the named individuals. Where children with no traced baptismal entry appear in the burial register for reconstituted parishes, 'deduced' births are conventionally added to family reconstitution forms, with either the same date as the burial, or the date of the mid-point of the latest suitable gap in a birth-series.[15] This is not believed to cause any serious distortion, even when the possibility of wrongly assigning a 'deduced' birth to a child baptised in another parish, is taken into account.

Hence it is to be expected that the infant mortality levels for both Haddenham and Doddington would be lower than that for March. The data from these three communities of fenland Cambridgeshire were tabulated in order to provide information on the distribution of deaths within the first year of life. Both the cumulative totals of deaths and the cumulative rates for the three separate communities are shown. (Table 5.6)

Table 5.6 Deaths and death rates (per 1000) within the first year of life for three Isle of Ely communities.

Day	0	6	31	61	91	181	364	N (Total Baptisms)
Doddington								
Deaths	3	130	265	300	339	424	511	2171
Rate	1	60	122	138	156	195	235	
Haddenham								
Deaths	17	133	516	584	653	788	908	7001
Rate	2	19	74	83	93	113	130	
March								
Deaths	498	685	961	1146	1235	1409	1616	6217
Rate	80	110	155	184	199	227	260	

Source: March reconstitution and the parish registers for Haddenham and Doddington.

Note: The registers for March, Haddenham and Doddington began in 1548, 1570 and 1681 respectively.

The overall level of infant mortality in March, Doddington and Haddenham was 260, 235 and 130 respectively, with the most striking feature being the low level of infant mortality in Haddenham in contrast to the deep fen communities of March and Doddington. Part of this may be explained by the topographical nature of Haddenham in that it is the highest parish in the Isle of Ely and straddles the 50-150 foot contour line, somewhat higher than the twenty foot spot height of March.

The infant mortality data for March, Doddington and Haddenham in Table 5.6 was then subjected to a biometric analysis in order to distinguish between the endogenous and exogenous components of infant mortality. These resultant components of mortality were then tabulated. (Table 5.7)

Table 5.7 Endogenous and exogenous components of infant mortality for three Isle of Ely communities, 1550-1749.

	Endogenous Mortality	Exogenous Mortality d <31	Exogenous Mortality d>/ 31	Total
Doddington	86	34	149	235
Haddenham	57	17	73	130
March	116	39	144	260

Source: As Table 5.6

The one most striking feature of Table 5.7 is the respective levels of endogenous and exogenous infant mortality. While the endogenous infant mortality levels were high for Doddington and March, the exogenous infant mortality levels were exceptionally high for both of these communities. This is especially striking since a high endogenous infant mortality is rarely followed by an even higher exogenous mortality. March was the only exception in Table 5.4, and while Gainsborough experienced high endogenous death rates its exogenous infant mortality rate was 40% lower.

The level of endogenous mortality within these three fenland Cambridgeshire communities varied widely with Haddenham having an endogenous mortality rate some 50% below that for March. However, the endogenous mortality rate for March is exceptionally high, which at 116 per 1000 implies that one child in nine died soon after birth/baptism from endogenous causes. Very few rates as high as this have been found in comparable studies of early modern England or pre-industrial Europe.[16]

5.5 Summary

Traditionally historians have tended to imply that life in early modern England was 'nasty, brutish and short'. However, this is an erroneous assumption. Mortality rates in early modern England exhibited marked regional differences, as well as internal diversification over time.

Furthermore, the infant burial rates evident in March were much higher than those of the other Cambridgeshire communities and much higher than the larger towns of southern England with the possible exception of some London parishes.

The following section discusses the interactiveness of biological, physiological, as well as socio-economic factors that may have had some bearing upon the high endogenous and exogenous infant and child mortality levels evident in the fens.

5.6 Biometric analysis of infant mortality further explored

The first major point of interest concerning the causes of infant mortality levels within the fens continues the above discussion of endogenous and exogenous mortality.

From the biometric analysis above it is evident that infant mortality rates within the Isle of Ely parishes fluctuated widely. However, the biometric analysis, when tabulated for the three parishes of March, Doddington and Haddenham by fifty year cohort periods produced some striking anomalies. (Table 5.8)

Table 5.8 Endogenous and exogenous mortality rates ($1000q^{0}$) by fifty year periods.

	1550-99	1600-49	1650-99	1700-49
March				
Endogenous	68	46	153	106
Exogenous	190	126	158	163
Total	258	172	311	269
Haddenham				
Endogenous		42	82	55
Exogenous		77	100	100
Total		119	182	155
Doddington				
Endogenous			95	90
Exogenous			140	141
Total			235	231

Source: Reconstitution data for March
Parish register data for Haddenham and Doddington

Table 5.8 compares the changes in the endogenous and exogenous elements within the infant mortality rates for March, Doddington and Haddenham by fifty year cohort period and is indicative of wide variations within infant mortality rates between the fenland communities, differences as marked as the regional variations between the parishes in Table 5.1.

In March the endogenous and exogenous infant mortality rates move in a cyclical fashion to the end of the seventeenth century. By the first half of the seventeenth century both the endogenous and exogenous rates are around a third lower than the second half of the sixteenth century levels and while both of these rates increase in the second half of the seventeenth century, the twenty-five percent increase in exogenous infant mortality is far outstripped by the 330 percent rise in the levels of endogenous mortality. During the early eighteenth century the exogenous rates remained more or less stable, while the endogenous rates fell by a third, although they were still a considerable way above the endogenous rate for the period from 1550-1649.

The endogenous and exogenous infant mortality rates in Haddenham followed a similar overall pattern to those experienced in March, although at a much lower level. Both endogenous and exogenous infant mortality rose during the course of the seventeenth century, with the exogenous rate remaining relatively stable during the first half of the eighteenth century, whilst the endogenous rate dropped considerably and neared its early seventeenth century level.

The endogenous and exogenous rates for Doddington remained relatively stable for both cohort periods, although it must be borne in mind that the registers did not start until 1681.

Exogenous infant mortality was higher than endogenous infant mortality in all three fenland communities and is indicative of external factors influencing the mortality pattern of the

Isle of Ely moreso than factors related to defects at birth.

The changing circumstances of the drainage schemes might be important to the interpretation of the infant mortality patterns since the effects of drainage and the concomitant rise in population probably had some bearing on the infant mortality rates. Furthermore, from the mid-seventeenth century the drainage schemes might paradoxically contribute to the increase in the levels of infant mortality since new arrivals in the area would not have had the same immunity to endemic diseases as that of the locals.

The unhealthiness of fenland Cambridgeshire was frequently attributed to 'ague' and as such aroused numerous comments. Ague, seen by contemporaries as endemic to fenland and marshland areas was perceived not only as a danger to the local inhabitants but also as a deterent to inmigration.

Although ague was perceived by contemporaries as more of an illness rather than an actual cause of death, repeated attacks could certainly lower an individuals resistance to other infectious diseases and bring about death from other causes. Consequently, any sufferer debilitated from an attack of 'ague' would be less able to resist such infectious diseases as smallpox, typhoid and influenza.

Dobson in her work on the Essex and Kent marshland has highlighted the nature and spread of diseases afflicting the low lying areas of seventeenth and eighteenth century south-east England and suggests that 'ague' was, in actual fact, a form of malaria transmitted by the anopheline mosquito.[17]

Dobson notes that malaria was frequent in areas of poor sanitation and was transmitted by direct contact of the anopheline mosquito. The disease, which invariably reached its peak in hot summers when the female mosquito was prolific, could easily breed in rivers and streams with a low discharge or stagnant pools.

Dobson further notes that infants and children under the age of five were more severely affected than any other age group.[18] If this was the case then part of the high levels of exogenous mortality evident in fenland Cambridgeshire may well be attributable to the effects of malaria or 'ague'. Thus the anopheline mosquito may well have been responsible for part of the twenty five percent increase in the exogenous infant mortality levels in the second half of the seventeenth century.

While the high levels of exogenous infant mortality from 1650-1749 may well be attributable to malaria, this could also be applied to the high levels of exogenous infant mortality in the sixteenth century since the frequent inundations would leave stagnant pools of water. However, why exogenous mortality dropped in the first half of the seventeenth century is perplexing, unless the local inhabitants had acquired some degree of immunity prior to the concomitant rise in the population from the mid-seventeenth century.

Whilst ague or malaria may be a possible explanation for part of the high exogenous mortality rates in fenland Cambridgeshire, the endogenous infant mortality rates in the three fenland communities of March, Doddington and Haddenham between the mid-sixteenth to mid-eighteenth century were just as striking and some possible causes behind these fluctuations will now be considered.

5.7 Feeding practices

Knodel and Kintner have suggested that high endogenous levels of infant mortality are related to feeding customs.[19] In their work on the impact of breast feeding on infant mortality levels in north European communities, they argue that the variation in endogenous infant mortality rates are linked to the delayed start of feeding.[20]

Up until the early eighteenth century breast feeding was often delayed by the mother who witheld colostrum, the first milk of mammals after parturition. Knodel and Kintner argue that this milk deprivation provided an insight into the high endogenous mortality levels, since colostrum is that part of the mothers milk which gives the child an immunological protection. Thus its deprivation increases the risk of infectious diseases attacking the newly born infant.

As evidence began to accumulate towards the end of the seventeenth century, physicians began to advise against delaying the start of feeding. Fildes discusses the effect of this and notes that the major part of the fall in infant deaths occured during the first half of the eighteenth century in endogenous infant mortality.[21]

Although endogenous mortality rates had begun to fall by the first half of the eighteenth century, in both March and Haddenham, whether or not this was due to improved and innovative medical practices amongst the physicians and mid-wives within the Isle of Ely is open to question.

The general spread of medical advice and any new innovative ideas usually took place through better qualified doctors as well as less traditionally orientated midwives and/or patients and it seems unlikely that the Cambridgeshire fens would have been at the forefront of the general spread of any new progresive medical advice regarding child care.

Whilst feeding practices fail to provide a possible explanation into the variable pattern of endogenous infant mortality, drug abuse could be a feasible alternative.

5.8 Drug abuse

Although drug abuse may be seen as a topical twentieth century problem heavy use was made of both opium and laudanum[22] in fenland Cambridgeshire from at least the sixteenth century to the late nineteenth century. These drugs were believed to be the 'antidote to the effect of the noxious vapours'[23] which could also 'prevent ague if given in due time and quantity'.[24]

This remedy, taken in order to suppress the morbific effects of the ague, in time would become not only a necessity but also a habit. Hence the levels of endogenous mortality, although there is no proof as such, could be due to drug withdrawal symptons in the newly born infant. Indeed, a nineteenth century physician suggested that the high infant mortality levels in East Anglia in the nineteenth century were due to the effects of opium.[25] However, until further research is carried out on the effect of the mothers drug abuse on the unborn child and breast feeding infant, little further application can be made to the mid-sixteenth to the mid-eighteenth century.

Whilst the implications of drug abuse provide an explanation into the variable pattern of endogenous infant mortality, the effects of multiple births is another.

5.9 Multiple births

The initial effect of multiple birth events on endogenous infant mortality levels is twofold. Firstly, there would be increased risks arising from any problems occuring at the birth of more than one child, and secondly increased risks from the division of the mothers post natal resources.

The reconstitution data for multiple births in March is summarised below. (Table 5.9)

Table 5.9 Multiple birth events in March by family size, 1550-1750.

Family size	Twins (1 set)	Triplets (1 set)	Twins (1 set) Triplets (1 set)	Twins (2 sets)	Total
2	51				51
3	23	2			25
4	29	1			30
5	30	2		1	33
6	27	1		2	30
7	13	1	1	2	17
8	13			1	14
9	15			2	17
10	7			1	8
11	5			3	8
12	4				4
13	2				2
14	1				1
15					0
16	1				1
Total	221	7	1	12	241

Source: Family reconstitution forms

From Table 5.9 it is evident that only twenty families had triplets or more than one set of twins, while 221 families had one set of twins. Moreover, whilst 241 families in March had multiple birth events, only 158 were included in the family reconstitution analysis, with the discrepancy being governed by the selection criteria for the inclusion of individuals within the family reconstitution analysis.[26]

Table 5.10 examines the level of infant mortality in multiple births within the family reconstitution analysis by sex for the period 1550-1750 and is particularly striking with regard to the sex specific levels of infant mortality.

Table 5.10 Multiple birth event infant mortality rates by sex 1550-1750

Sex	No	At risk	Dying	$1000q^0$
Male	43	86	29	337
Female	45	90	37	411
Mixed	70	140	71	507
Total	158	316	137	434

Source: Family reconstitution analysis data

Notes: None of the eight sets of triplets in the family reconstitution forms were in the ensuing family reconstitution analysis due to observational criteria.

Table 5.10 indicates that there was an extreme risk of infant mortality involved in multiple births. Although this is to be expected, the fact that multiple birth infant mortality levels are almost 62 percent higher than the already high overall infant mortality rate is particularly striking. (Table 5.4) The evidence from Table 5.10 also indicates that male twins had a **lower** death rate than either female or mixed twins and is perplexing in the light of Table 5.1 where male infants in March had a higher mortality rate than female infants for corresponding periods with the exception of the first half of the seventeenth century. This aspect of multiple birth infant mortality is particularly striking and is somewhat suggestive of sex-specific infant mortality with regard to multiple birth events.

One further marked aspect of Table 5.10 is the excedingly high levels of infant mortality associated with mixed twins. In view of the respective infant mortality levels for single sex twins one would expect to find that the female partner of mixed twins contributed greatly to the high infant mortality levels for these twins. (Table 5.11)

Table 5.11 Multiple birth event infant mortality rates for mixed twins 1550-1750

Sex	At risk	Dying	$1000q^0$
Mixed	140	71	507
Female	70	35	500
Male	70	36	514

Source: Family reconstitution for March

However, Table 5.11 shows this to be an erroneous assumption since both male and female infant mortality levels associated with mixed twins are similar.

From this brief discussion of some possible influences on infant mortality, the rates in March might be expected to show some relationship to socio-economic status, since the living-conditions, and the social networks through which innovative advice or changing customs were spread, might vary with wealth, status or education.

5.10 Socio-economic variations

Unlike their European counterparts, English family reconstitution studies rarely consider socio-economic variations in mortality.[27] Perrenoud, the major exponent on socially differentiated infant mortality, used the well documented family reconstitution of urban Geneva to identify three groups on an economic and socio-residential basis.[28] These three groups exhibited distinct infant mortality patterns with the lowest class having exceptionally high mortality rates throughout the seventeenth and eighteenth centuries.

Perrenoud argued that the degree of infant mortality noted was due to urban living-conditions, as no major subsistence crisis occured in the period studied, with the main killers being an outbreak of plague and recurrent smallpox epidemics. Meanwhile, French rural studies have identified no differentiation by class, the mortality patterns of all groups being dominated by epidemic and endemic diseases.

Finlay's work on parts of London, takes a less socio-economically viewpoint, although he states that 'one reason for low infant mortality in the wealthier London parishes was that many infant children were sent to the countryside to be wet-nursed, and some would have died outside the parish.'[29] Meanwhile, Wall in his work on Swindon has shown that a sex differential worked to the disadvantage of females in the families of labourers, tradesmen and craftsmen.[30] However, before discussing the implications of the socio-economic analysis of infant and child mortality in March between 1550-1750 and whether any sex differential worked to the disadvantage of either sex by socio-economic status, it was necessary to see how the infant and child mortality patterns for those families with recovered occupations compared to the overall infant and child mortality rates. (Table 5.12)

Table 5.12 Infant mortality rates for those with recovered occupations

	Male			Female		
	Risk	Dying	Rate/000	Risk	Dying	Rate/000
1550-99						
0	116	26	224 (287)	89	21	236 (242)
1-4	68	7	103 (135)	47	4	85 (79)
5-9	38	2	53 (71)	31	5	161 (73)
1600-49						
0	146	18	123 (157)	141	28	199 (186)
1-4	92	7	76 (130)	76	7	92 (87)
5-9	39	2	51 (40)	35	1	29 (65)
1650-99						
0	265	94	369 (358)	204	58	284 (292)
1-4	112	25	223 (218)	89	13	146 (145)
5-9	42	8	190 (119)	36	2	56 (67)
1700-49						
0	351	86	245 (263)	297	87	293 (244)
1-4	150	19	127 (144)	135	20	148 (163)
5-9	65	4	62 (68)	53	4	75 (108)
All cohorts						
0	868	224	258	731	194	265
1-4	422	58	137	347	44	127
5-9	184	16	87	155	12	77

Source: Reconstitution data

Notes: The figures in brackets are the overall rates from Table 5.1

Table 5.12 summarises the overall infant and child mortality experience by fifty year age groups by sex for those with recovered occupations and compares it to the overall trend in March for the period 1550-1749.

As was to be expected the infant and child mortality patterns of those whose parents had recovered occupations varied from the overall reconstitution data for March. The male infant and child mortality rates for those with recovered occupations were generally lower than the corresponding levels in the overall reconstitution data. Exceptions to this general trend were in evidence in the 5-9 year age group for the first half of the seventeenth century and for both infants and the 1-4 age group for 1650-99. Furthermore, the second half of the seventeenth century was the only period in which there was a close correlation between male infant and child mortality rates for ages 1-4.

On the other hand, the similarity between the female infant and child mortality for ages 1-4 was particularly striking. There was a fairly close correlation between female infant and child mortality. Hence, the infant and child mortality data, especially with regard to female infant mortality for 1550-1699 and male infant mortality for 1650-99 are suggestive of those families with recovered occupations being fairly typical of the whole reconstitution.

However, the actual number of deaths occuring to children decreased considerably, with the actual number dying in the 5-9 year group or the 1-4 year group from 1550-1649 being so small that an accident such as drowning in the watery wastes of the fen would make a large difference to the age groups. Consequently, the following socio-economic analysis concentrates solely on infant mortality rates.[31]

Table 5.13 provides a socio-economic analysis of infant mortality rates by sex for those with recovered occupations by fifty year periods.

Table 5.13 Socio-economic analysis of infant and child mortality rates in March, 1550-1749.

Male

	Class 1			Class 2			Class 3		
	Risk	Dying	Rate	Risk	Dying	Rate	Risk	Dying	Rate
1550-99	16	2	125	40	11	275	60	13	217
1600-49	19	0	0	74	10	135	53	8	146
1650-99	25	3	120	46	16	348	184	75	408
1700-49	38	9	237	126	30	238	187	47	251
All	98	14	143	286	70	245	484	140	289

Female

	Class 1			Class 2			Class 3		
	Risk	Dying	Rate	Risk	Dying	Rate	Risk	Dying	Rate
1550-99	15	2	133	30	9	300	44	10	227
1600-49	20	2	100	64	13	203	57	13	228
1650-99	26	2	77	48	15	313	130	41	315
1700-49	16	3	185	107	26	243	174	58	333
All	77	9	117	249	63	253	405	122	301

While Table 5.13 is initially suggestive of infant mortality patterns varying greatly by socio-economic status it needs to be viewed with extreme caution, since there are groupings with less than thirty observations, the minimum required for any statistical reliability. This is because the restrictions imposed on the data naturally causes reduced sample sizes. Furthermore, the groups affected by small sample size are, in actual fact, also the groups with the lowest infant mortality rates for corresponding periods.

Of the statistically reliable socio-economic groupings, the infant mortality patterns raise some particular issues. The trends over time for male and female infant mortality by socio-economic groups is similar except for females in the third socio-economic group. Infant mortality patterns generally tended to drop from the second half of the sixteenth century, rise during the second half of the seventeenth century before falling in the first half of the eighteenth century. However, the female infants of the unskilled and labourers had a totally different mortality pattern in that infant mortality rates rose from the mid-sixteenth century to the mid-eighteenth century.

There is less occasion for surprise in that the unskilled and labouring socio-economic group also had the highest infant mortality rates for corresponding periods with the exception of the second half of the sixteenth century.

However, one major point of interest in the infant mortality levels by socio-economic grouping is that female infant mortality was found to be higher than that for males for corresponding periods except for the second half of the seventeenth century for the two statistically reliable groups. Furthermore, female infant mortality levels for the first socio-economic group were higher than their male counterparts for corresponding periods until the mid-seventeenth century.

This aspect of socio-economic infant mortality is particularly striking since the overall levels of female infant for the family reconstitution only exceeded the male rate for the first half of the seventeenth century. Although this aspect of infant mortality may be due to the sample sizes, it is suggestive of a subgroup of the population being out of line with the evidence from the whole reconstituted population. It has been suggested that a higher female mortality reflects factors such as a less than adequate diet, life styles, infanticide or health care.[32] However, one present day factor that appears to be related to sex-specific diseases is that the lungs of newly born male infants are not as advanced as those of female infants. This accounts for the problems that male infants infants have at birth with respiratory problems, and has been shown to be one of the causes behind the higher male than female infant mortality rates of the twentieth century.[33] But whether present day trends can be equated with pre-industrial societies, is a question that is still open to discussion.

There are thus a diversity of factors that could influence the sex differences in the socio-economic groups. The complexity and interactions of these varying factors require a more detailed study than is possible within this present work due to the limitations of occupational data.

Furthermore, the infant mortality rates were also at their highest levels during the initial drainage schemes of Vermuyden except in the case of female infants for the third socio-economic group. Hence the changing circumstances of the drainage schemes may both have affected the survival and growth of families in more ways than can be discussed by looking at socio-economic labels.

5.11 Conclusion

Much has been written on infant mortality levels with few, if any, decisive conclusions as to why infant mortality varied widely, not only over time, but also between various parishes for corresponding periods. It would appear from the data for the eight reconstitutions that in the latter part of the sixteenth century mortality rates were relatively low. However, this relief was short lived as it did not last into the second half of the seventeenth century, where infant mortality rates were again at high levels.

The evidence from the family reconstitution for March suggests that the infant mortality rate varied considerably. The burial rates evident in March were much higher than those of the healthiest Cambridgeshire communities and much higher than some of the larger towns of southern England with the exception of some London parishes.

Comparing the general pattern in March with that of other parishes indicates that March had an exceedingly high level of mortality at all ages with the endogenous levels of infant mortality in the second half of the seventeenth century suggesting that the draining of the fens, and the concomitant rise in the population density created a less than healthy environment. Furthermore, the implications of drug abuse, especially if seen as an antidote to the effect of the unhealthy environment coupled with mothers witholding colostrum, that part of the milk which provides the child with a natural immunological protection, could also account for the variable patterns of infant mortality within March.

The problems created by an unhealthy, environment may have been compounded by the breakdown of the childs' physical defences to infection and disease. The exogenous results suggest that there was a deterioration in the external conditions governing the health of infants and instantly reveals the problems associated with a 'drowned' economy.

There is little, if any, quantitative evidence for the majority of the varying factors that affected the levels of infant mortality within March and the surrounding countryside. An extension of any of the arguments put forward would depend on literary inferential evidence and medical case histories, which are not in existence for the early modern period for March. However, the findings clearly illustrate that further research on infant mortality levels is required in the ‘drowned’ economies, such as the Essex marshes, Somerset Levels and Lincolnshire Fens in order to see how they compare to the levels discussed here. A study such as this, if all the evidence were available, would certainly add to an appreciation of the causes of infant mortality in pre-industrial England.

However, the main conclusion that can be drawn from this chapter is that it is not possible to identify dominant influences on the various socio-economic groups regarding the levels of infant mortality. Further work needs to be completed on sex-specific infant mortality levels since the cause of female vunerability has not yet been fully established.

References

1. Wrigley (1987)

2. Coale and Denemy (1983) in conjunction with Wrigley (1987) and Wrigley & Schofield (1981)

3. Flinn (1974) pp285-318

4. Smith (1979) pp210-1

5. The tabulations are presented by fifty year periods defined by the date of birth or baptism. Hence for any fifty year period there is only a slight overlap, and almost none with infant mortality, into the next fifty year period.

6. Reynolds (1979)

7. For example, by 1801 Gainsborough had a population of 5112 compared to a population of 2514 for March.

8. Reynolds (1979) This aspect of female infant mortality being higher than male infant mortality was actually in evidence in Willingham from 1550-1812.

9. It needs to be stressed that from a demographic point of view infant mortality rates always fall short of a full mortality history since the actual number of pregnancies is always greater than the number of registered births, especially as around a third of all conceptions abort.

10. Coale and Denemy (1983)

11. Bourgeois-Pichat (1951)

12. See Wrigley & Schofield (1983) p708 and Wrigley & Schofield (1979) pp61-95

13. See Smith (1979) p212. For further discussions on this point see for example Durand (1967) p136-59 and McNeill (1976)

14. For example see Wrigley & Schofield (1981)

15. Wrigley (1966) p129

16. For the English data see Smith (1979) and Wrigley & Schofield (1979), for a discussion of the European data see Flinn (1974) pp285-318.

17. Dobson, thesis (1982)

18. Dobson (1980)

19. Knodel and Kintner (1977) pp391-409

20. The evidence is summarised in Fildes (1980B) pp313-24. Also see Mclaren (1978) p378 who suggests that the English data indicates a clear link between the death of an infant and the reduction of the subsequent intergenesic interval.

21. Fildes (1982) p235-6, also see Fildes (1980A); Fildes (1980B) and Fildes (1979)

22. Laudanum is a by-product of opium.

23. White (1865) p260

24. Jones (1700) p23

25. Hunter (1864)

26. The eight families with more than one set of twins have an average size of more than ten children. Note that because mortality is calculated without adjustment of selection rules to allow for maternal deaths, twins which die as a result of the mother's death in child-birth are not

included in the analysis.

27. The pioneering work of Wrigley (1977B) on Colyton includes a limited socio-economic analysis based on the entries giving occupational data in the parish registers for 1609-12, 1765-99 and 1813-9 as well as including evidence from the nineteenth century census data. Souden, thesis (1981) p254 also presents similar occupational data based on sixteen reconstitutions. Other English studies on occupational structure include Patten (1979); Pickles (1978) and Brodsky-Elliott, thesis (1981). Patten uses wills as a source of data on non-agricultural occupations in Norfolk and Suffolk. Pickles uses probate inventories for short term periods in communities within the mid-Wharfdale hinterland of Otley. Brodsky-Elliott selects records from the examinations of couples which preceded the granting of special marriage licenses in London.

28. See Perrenoud (1982) and Perrenoud (1977)

29. See Finlay (1981)

30. See Wall's unpublished paper on Swindon, a copy of which is in the library of the Cambridge Group for the History of Population and Social Structure.

31. The socio-economic data was grouped into three broad classifications.

1) Gentleman and esquire
2) Yeoman, craftsmen and tradesmen
3) The unskilled, labourers and the lower eschelons of agricultural society.

32. See Wall (1981) for a detailed discussion of the various factors affecting infant mortality levels.

33. Waldron (1983) p1114-5. I am grateful to Olga Bright for drawing my attention to this article.

Chapter 6

Age at Marriage

6.1 Introduction

Malthus assumed that the timing of marriage followed a rational assessment of the individual's economic circumstances.[1] Half a century later, support for Malthus came from Sundt's study of the population of Norway, which showed great insight into the inter-relationships of nuptiality and fertility.[2] This early practical exercise in demography noted that while economic well-being formed an incentive to marry, the 24% increase in the number of marriages celebrated in the decade following 1835 was due to the baby boom between 1815-1825 which almost doubled the 20-30 year old age group in evidence between 1835 and 1845.[3]

The twin themes of economic influence on nuptiality and fertility, and the lagged effect of the latter on the former, are also evident in some twentieth century studies. Easterlin,[4] for example, in his work on America, states that a growth in relative well-being encouraged earlier marriages and child bearing, while marriage and child-bearing were postponed when relative well-being deteriorated.

However, the clearest indications of the socio-economic influence on marriage and fertility are found in historical surveys, particularly for those areas dominated by the European marriage pattern.[5] Wrigley and Schofield's aggregative analysis of 404 parishes[6] includes an analysis of marriage ages for a group of twelve reconstituted parishes, showing that a decline from the peak marriage ages of the seventeenth century was parallel to an increase in fertility found in the aggregative baptism totals and that both were responding to the upswings and downturns of the economy. Further analysis, confirming the downward trend in ages after the late-seventeenth century, is also evident in Wrigley and Schofield's summary paper on the use of English family reconstitutions.[7]

However, whilst a great deal of research has been directed towards the female marriage patterns and the subsequent levels of age-specific fertility, little attention has been given to male marriage characteristics. This chapter aims to show that male marriage patterns are an important concern to the demographic historian since they reflect the communities economic opportunities more positively than female marriage age characteristics. This seems self evident since the male was the principal breadwinner of the new family which could only be formed if the resources were to hand or in prospect.

The marriage age data for March are compared to data from other family reconstitutions in order to indicate the extent to which the marriage behaviour in March corresponds to that in other communities in early modern England. Following this comparison, the male age at first marriage in March is discussed more fully and related to the available economic opportunities within the community.

6.2 National marriage age data

In early modern England, in common with other north European historical societies, late marriage was the norm. It is this late age at marriage, coupled with a high proportion of adults who never married which demographically distinguishes early modern England from the modern developing countries.

While family reconstitution studies do not provide information on the proportion of individuals who never marry, they do yield data on the age at marriage. Consequently, they are of major importance in providing marriage age data prior to the national census data of the nineteenth century.

Family reconstitution studies conventionally provide evidence of the mean marriage age characteristics for fifty year cohort[8] periods within early modern England. In family reconstitution studies marriage ages are calculated for spouses of known age from all reconstituted marriages which have a known date of marriage and at least one spouse's baptism or birth. On family reconstitution forms each spouse is coded by marriage rank. For explicitly known ranks, the code is the marriage rank (1, 2, 3) but where exact ranks are not given the code is an approximation to the lowest feasible rank (>=1, >=2, >=3). However, it is generally accepted that marriages ranked '>=1' are first marriages, and whilst this may lead to some bias it is considered an acceptable procedure.[9]

Table 6.1 summarises the marriage age characteristics for both men and women in eight English reconstituted parishes for each half century from 1550-1749 inclusive and reveals some interesting anomalies.

Table 6.1 Age at first marriage

	Male			
	1550-99	1600-49	1650-99	1700-49
Aldenham	28.6	29.1	29.7	29.2
Banbury	26.0	27.2	27.4	26.6
Colyton	27.8	27.4	26.4	26.6
Gainsborough	24.0	27.0	27.0	27.5
Hartland	27.9	28.8	30.7	29.6
Terling	26.0	25.1	25.5	24.7
Willingham	25.1	26.2	26.3	25.9
March	24.9	26.4	25.4	24.7
Mean	26.2	27.2	27.3	26.9

	Female			
	1550-99	1600-49	1650-99	1700-49
Aldenham	22.0	25.2	26.2	25.8
Banbury	24.9	25.4	25.8	26.7
Colyton	26.9	27.3	29.4	28.6
Gainsborough	22.1	25.0	25.3	25.5
Hartland	25.7	27.8	28.4	28.2
Terling	24.5	24.6	23.2	24.4
Willingham	22.7	25.1	26.8	24.9
March	23.1	21.8	23.4	25.1
Mean	24.0	25.3	26.1	26.2

Source: Wrigley (1976) Table 1 of typescript

Note: The mean is the unweighted mean

The figures for the period 1550-99 are based on small numbers of marriages and should be regarded as less reliable than the figures for the later periods.

The overall pattern shown by the unweighted mean of age at first marriage for the eight communities in Table 6.1 is relatively straightforward. Marriage age rose from the mid-sixteenth century, reaching a peak in the late seventeenth century for men and the early eighteenth century for women. The overall changes in the age at marriage for men was relatively slight, only rising by 1.1 years between 1550-1699 before falling by 0.4 years during the first half of the eighteenth century. The overall changes in the female age at marriage were more marked, rising by 2.2 years between 1550-1749. Since the female age at marriage was consistently lower than the male age at marriage, the overall differences between the two sexes varied by 2.2 years in 1550-99 to 0.7 years in 1700-49.

However, if the eight reconstituted communities are compared to each other by fifty year periods some intriguing facts come to light.

The male mean age at first marriage is consistently higher than the corresponding female mean age at first marriage except in March and Banbury for the first half of the eighteenth century, Willingham for 1650-99 and Colyton during 1650-1749. Of the eight reconstituted parishes only Colyton, Terling and March have peak male marriage ages before the mid-seventeenth century. Men experienced their lowest age at first marriage in the second half of the sixteenth century except for Colyton, Terling and March. Colyton males approached marriage at their lowest mean age during the second half of the seventeenth century, while those in Terling and March had their lowest age at first marriage during the early eighteenth century. Furthermore, except for March and Terling, the lowest age at first marriage for women occured during the second half of the sixteenth century.

However, while six of the parishes experienced their lowest mean age at marriage in the sixteenth century, it may need to be stressed that the recorded age at marriage in the late sixteenth century could be biased in that registration did not begin in most parishes until after the 1550's. Hence, whilst those brides or grooms marrying at or below the accepted mean age at marriage would have a known baptismal date possibly by the mid 1570's, those brides or grooms approaching their first marriage later in life would undoubtably fail to have a baptismal date.

The comparison of the trends of the marriage age data of these eight family reconstitutions are suggestive of similar movements in the female population. Despite the scattered geographical and radically different socio-economic characteristics of these eight parishes, the female age at first marriage followed the same trend from the mid-sixteenth to the late seventeenth century with the exception of both March and Terling. This pattern of an overall rise between 1550-1699 was only replicated in the male age at first marriage for Aldenham, Banbury, Willingham and Hartland.

Recognising that there is more uniformity in the female age at first marriage despite the marked regional diversifications of the eight reconstituted parishes, this chapter is more concerned with the variations in the male mean age at first marriage. Since there is some uniformity in the female age at first marriage, the mechanics of the variation in the male age at first marriage, if they are genuine, must either lie in the socio-economic characteristics of the parishes or in the nature of that part of the reconstituted population for which marriage ages are known. Hence a more detailed study of the specific nature of the male marriageable population is required. The following section examines the male age at first marriage for March before discussing the socio-economic characteristics of this community in greater detail.

6.3 The age at first marriage for males in March

Before trying to unravel the socio-economic influences of the ages at first marriage for March, characteristics of the marriage ages require consideration.

The data in Table 6.1 provides the mean age at first marriage but as a measure of central tendency, the mean is prone to bias by extreme values. For example, a mean age at first marriage of 25 would occur if half the population married at 15 years and 35 years respectively, or if a fifth married at each of the respective ages of 15 years, 20 years, 25 years, 30 years and 35 years.

The overall pattern of the mean age at marriage for men in March rises from the second half of the sixteenth century to the mid-seventeenth century, falls during the second half of the seventeenth century before rising in the early eighteenth century, although it fails to attain it early sixteenth century level. The male age at first marriage for March is closest to Willingham for the period 1550-1649 and Terling from 1650-1749.

While the tabulation of the mean age at first marriage in March summarises the overall trends it tells little about the incidence of marriage by age. The distribution of the male age at first marriage in March is summarised by fifty year cohort periods in Table 6.2.

Table 6.2 Distribution of age at first marriage for men.

Period	U20	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34+	N
1550-99	2	0	1	3	2	1	3	1	1	1	0	1	0	0	0	1	17
1600-49	1	2	9	6	7	8	8	4	11	9	5	5	3	1	5	1	85
1650-99	5	1	5	6	10	5	1	10	2	2	4	2	0	3	1	1	68
1700-49	4	11	8	15	9	9	12	6	4	6	8	0	2	1	1	1	97
All	12	14	23	30	28	23	34	21	18	18	17	8	5	5	7	4	267

Source: Family reconstitution data

From Table 6.2 it is evident that teenage marriage was rare with only five percent of all recovered male marriages with a known baptismal date occurring to those under twenty. Furthermore, few men approached their first marriage after the age of thirty with the exception of the period 1600-49, when 19 percent of all men with a known age at marriage formed a union in their thirties.

The distribution of ages for grooms shows that more than three-quarters of grooms of known age were twenty-two years or over with a half over the age of twenty-four at marriage. This tends to rule out excessive bias to means, as does the relative infrequency of teenage grooms. Thus, although teenage marriages were certainly more common in the late seventeenth century, these were not sufficient to bias the mean age to any considerable extent.

Hence, there appears to have been a genuine fall in the age at which men married in the late seventeenth and early eighteenth century. However, marriage ages available in reconstitution can never be guaranteed as being accurate to within a month since they are based on baptismal data rather than births.[10] Although baptism could, in theory, occur at an unspecified time after birth, the available data for March suggests that the mean age at baptism during the second half of the seventeenth century was around twenty days.

Hence, it remains possible that the change in age at first marriage is simply due to a lengthening of the time between birth and baptism, hence making the individuals appear younger than they actually were. On the other hand, the fall in the mean age at first marriage after the mid-seventeenth century could be due to the unrepresentativeness of the recovered marriage ages.

Whatever the true situation, the means cannot give an adequate description of marriage ages, and any bias can be assessed by considering the medians of the distribution of male age at first marriage. Table 6.3 summarises the means and medians of first age at marriage by fifty year cohort period.

Table 6.3 Median and mean of the male age at first marriage in March

	Male			
	1550-99	1600-49	1659-99	1700-49
Median	23.5	25.4	24.2	23.2
Mean	24.9	26.4	25.4	24.7

Source: Family reconstitution data

It is evident from Table 6.4 that the medians are upto 1.5 years lower than the means. The median rose by 1.9 years from the mid-sixteenth to the mid-seventeenth century before falling by 2.2 years by the early eighteenth century, while the mean increased by 1.5 years to the mid-seventeenth century before falling by 1.7 years by the early eighteenth century. Hence, the movements of the two measures of centrality are similar, with both increasing from the second half of the sixteenth century to the first half of the seventeenth century, before falling to a new low in the first half of the eighteenth century.

Furthermore, in every cohort period the distribution of age at first marriage is positively skewed. The mean and median are not, however, in themselves satisfactory without some idea of the distribution, for without this, it is impossible to say how far the dispersion of events is arranged around the measure of central tendency. Hence, this analysis of marriage ages can be continued by looking at the quartile ranges of the distribution of age at first marriage. (Table 6.4)

Table 6.4 Median and quartile age at marriage for the male population of March

	Male			
	1550-99	1600-49	1659-99	1700-49
Lower Quartile	21.4	22.5	22.0	21.1
Middle Quartile	23.5	25.4	24.2	23.2
Upper Quartile	25.8	27.9	25.8	26.8
Semi-quartile range	2.4	2.8	3.0	2.5

Source: Family reconstitution data

Table 6.4 records the median and quartile ranges of the distribution of ages at first marriage for the male population of March. The lower quartile, the age by which a quarter of the male population is married rose from the mid-sixteenth century, reaching a peak in the first half of the seventeenth century. The overall change was relatively slight, only rising by 1.1 years between 1550-1649 before falling by 1.4 years by the mid-eighteenth century. The upper quartile, on the other hand, was more marked. The change to the upper quartile, the age by which three quarters of the male population in March had approached their first marriage, rose by 2.1 years from the mid-sixteenth to the mid-seventeenth century, falling by 2.1 years by the end of the seventeenth century, before rising by 1.0 years by the middle of the eighteenth century.

The semi-quartile range is important in that it is approximately the period, in years, over which the middle quarter of the population were being married. This gives a measure of the spread of the age at marriage intervals, with a small range implying a relatively consistent practice, while a widespread one indicates considerable variation in the overall age at marriage within the population.

The semi-quartile ranges are low throughout the 200 year period, rising from a spread of 2.4 years in the mid-sixteenth century to a spread of 3.0 years in the second half of the seventeenth century before falling to near its sixteenth century level in the first half of the eighteenth century. This implies that the age at marriage was relatively consistent between 1550-1749 with the seventeenth century experiencing the largest variation.

One striking feature of the semi-quartile ranges is the similarity of the two cohort periods of the seventeenth century, and the similarity of the second half of the sixteenth century with the first half of the eighteenth century. However, the purpose of this chapter is not to analyse the minute variations in the male marriage ages but to assess the possible reasons behind the variations in the male marriage age. These variations probably lie in the socio-economic characteristics of the parishes or in the nature of that part of the reconstituted population for which marriage ages are known. Hence, the demographic relevance of the socio-economic factors and the representativeness of the recovered marriage ages will now be considered in detail.

6.4 Economic opportunities, restraints and constraints

The characteristic of late age at marriage, which sets early modern European communities apart from other contemporary societies, should not be viewed as simply a 'quaint' custom but as a 'barometer' of the communities economic opportunities or constraints. A period of incipient population pressure might be cut short by a rise in the age at marriage which would cause the population increase to come to a virtual standstill. On the other hand, a period of economic growth or 'relative well-being'[11] might cause the age at marriage to drop, hence bringing about a growth in the population.

In England there is a clear link between first marriage and the formation of family units, independent of the parental home.[12] This was preceded by a period of up to a decade learning life-skills. Young people therefore approached marriage not only at a very different age but from an entirely different experience of social and familial life from that of other traditional societies. Consequently, marriage in early modern England required some degree of economic independence from parents as it involved creating a separate household. Hence the timing of marriage in pre-industrial England could be regarded as evidence of the communities prevailing economic climate.

If this is the case then how do the marriage patterns in March relate to the real changing socio-economic opportunities within the community?

It is possible to explain the deferred male marriage age by the need to buy or inherit a property or a 'niche' in the community in order to earn a living.

The products of the fen offered sustinence to those with little or no property, while for the more financially stable, the fens provided a supplementary diet that could be used as a cushion against inflation. However, while the Isle communities had the ability to sustain families on minute holdings[13] they could not cope with an indefinitely increasing population, especially prior to drainage when the majority of the fens regularly disappeared under the inundations of both fresh and salt water.

The rising age at marriage in the early seventeenth century may well be attributable to the problems arising from an increasing population,[14] especially as almost a fifth of the recovered marriages evident in the early seventeenth century occurred to the over thirties age range, with only a third of all recovered marriages occurring under the age of 25 for the same period.

As the drainage schemes increased, the amount of land available for cultivation also increased. During the initial period of drainage the mean age at marriage for males began to fall, with more than half of recovered marriages occurring between the ages of 21-26 years inclusive over the next century. Hence, the lowering of the male age at marriage after the mid-seventeenth century might be explained by there being less need to defer marriage since land and property was becoming available for both the agricultural and non-agricultural groups.

If marriage is at least partly a rational response to economic circumstances, then there are two possible economic explanations for men marrying younger. Either opportunities in the parish were good, or excessive sex-specific migration to other areas of economic opportunity had left the opposite sex with a restricted set of potential marriage partners.

The mid-sixteenth century in March was one of outmigration, (Figure 3.6) hence, in these terms, the mid-sixteenth century situation could possibly be translated as representing sex-specific migration. The fact that men are marrying younger in the late seventeenth century, despite excessive inmigration implies increased prosperity in the community. However, the land and labour markets must have provided an increase in female opportunities within the parish, and increased demands for specialised female labour in harvesting the fenland by-products and farming.[15] The youth of the grooms, especially in the second half of the seventeenth century, might be explained by the women's ability to contribute to the income of the family. However, the comparatively advanced age of some men at marriage can also be fitted into this rationale, since women gainfully employed might be unlikely to marry young, unless a better opportunity arose.

This economically rational explanation of the observed trends in the male marriage ages is, however, not as acceptable as it at first appears, since the male individuals with known age at marriage presumably have some bearing on the apparent mobility of the population.

In an environment which was not particularly favourable to arable farming prior to drainage, it is perhaps surprising that the male population in the second half of the sixteenth century has similar marriage characteristics to that of the first half of the eighteenth century, a period when farming on the fenland was arable based.[16]

Whether data bias alone is sufficient to explain why the semi-quartile ranges are so similar between the seventeenth century and the second half of the sixteenth century and the first half of the eighteenth century is not clear. However, from the patterns of outmigration and inmigration evident in the aggregative analyses (Figure 3.6) the characteristics of the population turnover suggests that migration is a powerful factor in marriage ages.

One further point of interest regarding male marriage patterns is that of inheritance customs. The wills for March for the mid-sixteenth century and the period from the second half of the seventeenth century to the mid-eighteenth century are suggestive of partible inheritance as the means by which fathers disposed of their land holdings and common rights to their offspring. However, during the first half of the seventeenth century, when the mean male age at marriage peaked, a few of the wills are suggestive of impartible inheritance.

This slight indication of impartible inheritance during the first half of the seventeenth century is most probably due to a biased sample. On the other hand, could it be due to, say, changing inheritance customs so that when resources were low, impartible inheritance supplanted the previous custom of partible inheritance? This, though far fetched, may have a particle of truth, and could be viewed as a Malthusian 'preventative check' being enforced.

The complete picture though, remains largely inexplicable and any prediction of the key demographic variable of age at first marriage in March from known patterns in other parishes for which studies exist, particularly the detailed work on Colyton, is not possible. However, one thing is certain, in general in western Europe there was a long interval between menarche and marriage and the timing of marriage was much more likely to be determined by economic circumstances.

On the whole, then it would appear that men had to delay marriage until economic circumstances were favourable. Grooms commonly started marriage with some property, but may have had insufficient to survive subsistence crises, which could have been worsened by precocious marriage and consequent over-production of children.

Hence if marriage was a rational response to the economic circumstances, the overall trend in male marriage ages could be viewed as a strategic measurement of the communities economic climate. However, it is possible that the recovered marriage ages were due to the marriage ages obtained from the reconstitution being unrepresentative of the population of the community of March as a whole.

6.5 March marriage age data in perspective

Although in March, many couples have observational evidence, few have acceptable marriage age data. Thus, it is highly likely that the age patterns are untypical of the whole population, even of the reconstituted part of the parish.

Marriage age data from family reconstitution studies may not be in keeping with the experience of the community. A danger of bias exists in all reconstitution tabulations because of the mobility evident in pre-industrial England. Populations were not closed hence, it may be that there is an inevitable danger that those whose marriage age can be established by linking baptism and marriage records may be an unrepresentative sample of the population of the community.

The custom of marriage from the wife's home dictates that while many native women should have known marriage ages, many would also leave March after marriage. In contrast non-native women would marry in their own parish, and consequently have neither baptism nor marriage registered in March. Thus, female ages tend to be dominated by the marriages of natives, many of whom leave soon after marriage, and play no further part in the parish demography. However, especially in the case of March, women with untraced baptismal dates were not necessarily baptised in another parish, particularly as custom dictates that most of these unions would have been solemnised in the wife's home parish, not that of the husband.

For men, the link between baptism and marriage is usually only made when the date of marriage is also known, which on the assumption of marriage in the wife's parish suggests that the wife was resident in the parish before the marriage. Thus, men marrying non-March women are likely to do so in another parish. Hence, on this assumption, only those males who were least adventurous in the search for marriage partners are certain of inclusion in the family reconstitution tabulation of marriage ages.

Thus, the adherence to the tradition of marriage from the wife's home could well over-emphasise the characteristics of men marrying within the parish, since the individuals included in the male marriage age calculations are biased by male stability.

Hence, it is apparent that all reconstitution marriage age data concerning males, is biased towards stable individuals. Consequently, this limits the interpretation of the marriage age-patterns of any individual parish and the use of the comparison with other parishes.

Although the representativeness of the findings of marriage age analysis are restricted, the explanation of the variations could be further pursued if data sources existed, by considering the implications of marriage age by socio-economic status and the tradition of apprenticeship. Social class may have had a bearing upon age at first marriage while those who travelled furthest would be free of parental supervision, and able to make a more independent choice of spouse. However, while no clear proof is evident it is probably true that a combination of economic circumstance and opportunity dictated the timing of the majority of marriages.

6.6 Conclusion

The comparison of the March ages at first marriage with those from other reconstitutions raises more questions than it answers. The analysis of marriage age data for March, and the comparison of trends with those in other reconstitution studies, highlights a number of important limitations on the use of reconstitution marriage ages, limitations which have rarely been discussed in earlier studies.

There is, of course, no possibility of analysing the ages of those whose birth or baptism was not recorded in the parish registers. This includes not only dissenters who failed to use the rites of the established Church but also inmigrants who arrived in the parish either during childhood, adolescence or as adults as well as those non-native couples who arrived after marriage. Furthermore, as a result of the custom of marriage within the wife's parish, male natives marrying non-native women would have no marriage date from which to calculate ages.

Hence, the nature of the available data on marriage ages may be responsible for many of the characteristics found in the eight reconstituted parishes, for the observed uniformity between female marriage ages in the national sample of eight family reconstitutions and the dis-similarity of the male age at first marriage. Consequently, it is not absolutely clear to what extent male marriage ages in the mid-sixteenth to mid-eighteenth are a product of the communities socio-economic characteristics or the result of bias in the population of those with known ages.

Furthermore, there are problems involved in determining economic influences on marriage ages since this demographic variable is ultimately determined by human choice. While the age at which any individual is married can be related to general economic, social or family circumstances, these are difficult to demonstrate, if in the last analysis, the decision turns out to depend on a suitable partner being available. However, the natural response to straightened circumstances was to delay marriage. This Malthusian 'preventative check' kept the population below the maximum carrying capacity of the economy.

This chapter has gone some way in discussing the biases evident in reconstitution based marriage ages. However, the paradoxical conclusion is that until evidence from the national censuses provides age data no accurate analysis of local marriage ages can really be undertaken. It is however, the inaccuracy of age recording in the censuses and the fact that adequate marriage age data does not exist for early modern England which led to the use of reconstitution evidence in the first place. Thus despite the biases evident in the marriage ages of family reconstitution studies, they are still the only adequate source of marriage ages prior to the nineteenth century census material.

References

1. Malthus (1798)

2. Drake (1980). This is a translation of Sundt's work of 1855.

3. However, the original baby boom was traced back to the healthy economic circumstances at the end of the Napoleonic era.

4. Easterlin, Wachter & Wachter (1978) p16

5. Hajnal (1965)

6. Wrigley and Schofield (1981) p421-31

7. Wrigley and Schofield (1983) p163 The period of time referred to is 1600-1799.

8. Demographic studies often use cohort analysis as a unit of study. A cohort is a group of individuals who experience the same significant event in a particular time period and can thus be identified as a group in subsequent analysis. [For a fuller discussion on this point see Wilson, C. (1985) (ed) *The dictionary of Demography]*

9. Wrigley (1966)

10. Although baptisms should have occurred within two weeks of birth it is now well known that baptism was sometimes delayed.

11. For example, see Easterlin, Wachter & Wachter (1978) who describe this point in relation to the twentieth century.

12. Wall (1979)

13. See for example, Spufford (1974) and Ravensdale (1974)

14. See Chapter 3 for a discussion of the pressure that the rising population exerted on land use.

15. This point is discussed in the following chapter.

16. See Childers (1868) for a listing of the crops grown in the Isle of Ely after the initial effects of drainage. Also see Young (1800) for a discussion of the effects of inundations on the crops of the Isle of Ely in the late seventeenth century.

Chapter 7

Marriage Seasonality

7.1 Introduction

Writing towards the end of the eighteenth century, Malthus stated that, 'There are men, even in the highest rank, who are prevented from marrying by the idea of the expense that they must retrench, and the fancied pleasure that they must forgive themselves of, on the supposition of having a family.'[1]

Here, Malthus assumed that the decision to marry followed a rational assessment of the individual's economic and personal circumstances. Two centuries later, Wrigley and Schofield argued that marriage was the most socially and economically determined demographic event, describing the underlying economic fabric of the marriage seasonality patterns as 'the changing seasonal demand for labour in agriculture,'[2] while Kussmaul advocates the use of marriage seasonality patterns as an indirect source for the history of the economy.[3]

But are economic constraints the only factor behind the seasonal patterns? The majority of the literature on marriage seasonality patterns has tended to concentrate on the fundamental features arising from economic restraint and ecclesiastical control. On the other hand, Bradley[4] and Edwards[5] suggest that the seasonality patterns reflect not only national or regional fundamental features, but also local and accidental variations.

This particular chapter attempts to assess the extent to which local customs such as the control of the local incumbent, the level of nonconformity the size of the community or the levels of employment, may have modified the seasonal pattern within seven Isle of Ely communities. However, before the effect of any local variations can be discussed it is necessary to look at the degree to which the influences of ecclesiastical discouragement and economic constraint within the Isle of Ely were consistent with the national data. For only when the seasonal patterns reflecting the ecclesiastical or economic calendars have been discussed, will any local variations be evident.

7.2 Seasonal Patterns

It is now well known that the seasons had a distinctive effect upon the annual pattern of the vital events within England during the early modern period. Marriages, were no exception to this seasonal pattern. The aggregative data from 404 parishes have shown the regularity of their timings, their peaks and troughs throughout the year. 'The monthly seasonality pattern of marriages was pronounced, and changed markedly between the sixteenth and nineteenth centuries. In its overall shape, however, it remained the same, with peaks in the early summer and autumn, separated by a late summer trough and a chasm in March.'[6]

How did the patterns evident in the Isle of Ely compare with the national data?

Drawing upon the aggregate marriage data for March, Haddenham, Wisbech St Peter, Wisbech St Mary, Ely Holy Trinity, Ely St Mary, and Doddington from the beginning of the parochial registration system to 1750, overall marriage seasonality patterns were formed.[7] The number of events recorded in each of the twelve months in each fifty year period from 1550-1750 is expressed as an index in which the figure of 100 represents the number of events that would have occurred in any month if the annual total of marriages had been evenly distributed throughout each month. The different number of days within each month was taken into account, with February being considered to be 28.25 days in length, hence making the year 365.25 days long.[8]

This index can be expressed by the following formula:-

$$I = ((365.25 * M_i) / (M_n * D_i)) 100$$

Where M_i = The number of events in any one month
M_n = The number of events in any one year
D_i = The number of days in any month

Thus, for example, an index of 123 indicates that there were 23 per cent more events than average, while an index of 72 would mean that there were 28 per cent fewer events than average.

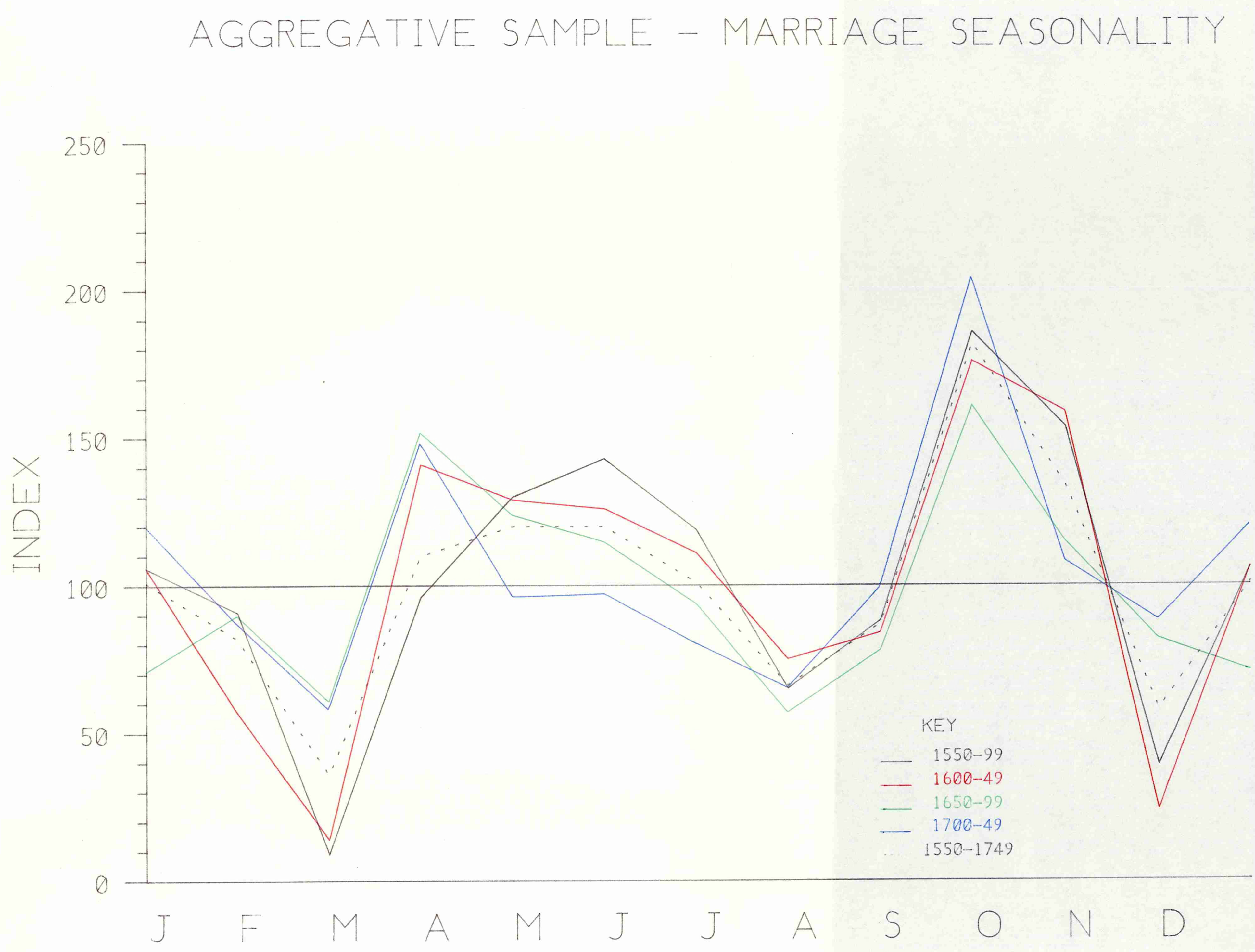
Table 7.1 and Figure 7.1 show the overall seasonal pattern of marriages within these parishes and its evolution over time.

Table 7.1 Monthly indexes of marriages by half century.

Period	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	N
1550-99	106	91	9	96	130	143	119	65	88	186	154	39	2362
1600-49	106	57	14	141	129	126	111	75	84	176	159	24	4224
1650-99	71	90	61	152	124	115	94	57	78	161	115	82	4750
1700-49	120	89	58	148	96	97	80	65	99	204	108	88	6203
Overall	101	82	36	110	120	120	101	66	87	182	134	58	

Source: Monthly frequency of events in seven Isle parishes.

Figure 7.1 Monthly marriage seasonal patterns.



Source: Table 7.1

The index of seasonality expressed in Figure 7.1 approximates to the national seasonal marriage pattern summarised in Figure 7.3 and Table 7.5 of *The Population History of England 1541-1871*.[9] Firstly, the basic overall shape is similar, with troughs in spring, late summer and winter which are separated by equally high periods in early summer and late autumn. The decline in the number of marriages during spring and winter is indicative of the pre-Reformation religious controls still having some effect two centuries later, while the drop in late summer is suggestive of the underlying patterns of labour demand. Secondly, the change in the monthly marriage patterns was not linear. Although March and December become considerably more popular months for marriage over the course of the seventeenth century and are suggestive of a linear decline, elsewhere the seasonality index was considerably more erratic. Working with fifty year periods, the **point** at which change occurred cannot be precisely identified but undoubtably the greatest period of change was the seventeenth century.

The effect that the two fundamental aspects of ecclesiastical discouragement and economic constraint had upon the monthly marriage seasonality patterns of the Isle of Ely will now be discussed in greater detail, before assessing how local variations modified the seasonal pattern.

7.3 Ecclesiastical Restraint

Change in religious practice is an obvious candidate for the variations evident in the monthly seasonal patterns.

Prior to the Reformation, there were three periods within the year in which marriages were prohibited from solemnisation. These were from Advent to the Baptism of our Lord, Septuagesima to Quasimodo, and Rogation Sunday until Trinity Sunday.

The [illegible] of the [illegible] conceptions [illegible] summarised in Figure 7.3 and Table 7.3 of The Population History of England 1541-1871.[9] Firstly, [illegible] shape is familiar, with troughs in spring, late summer and winter which are separated by conception peaks in early summer and [illegible] marriage during spring and [illegible] indicative of pre-Reformation religious controls [illegible] some [illegible] two centuries later, while the [illegible] is suggestive of the underlying patterns [illegible]. Secondly, the change in the monthly marriage pattern was not linear. Although [illegible] became considerably more popular amongst [illegible] in the course of the seventeenth century, [illegible] of a linear decline [illegible] where the seasonality [illegible] considerably more erratic. Looking [illegible] the point at which [illegible] identified but [illegible] the [illegible].

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7.3 [illegible] festivals

Change in religious practice is an obvious candidate for the variations evident in the monthly seasonal patterns.

[illegible] there were three periods when [illegible] prohibited [illegible]. These [illegible] Sunday until [illegible] Sunday.

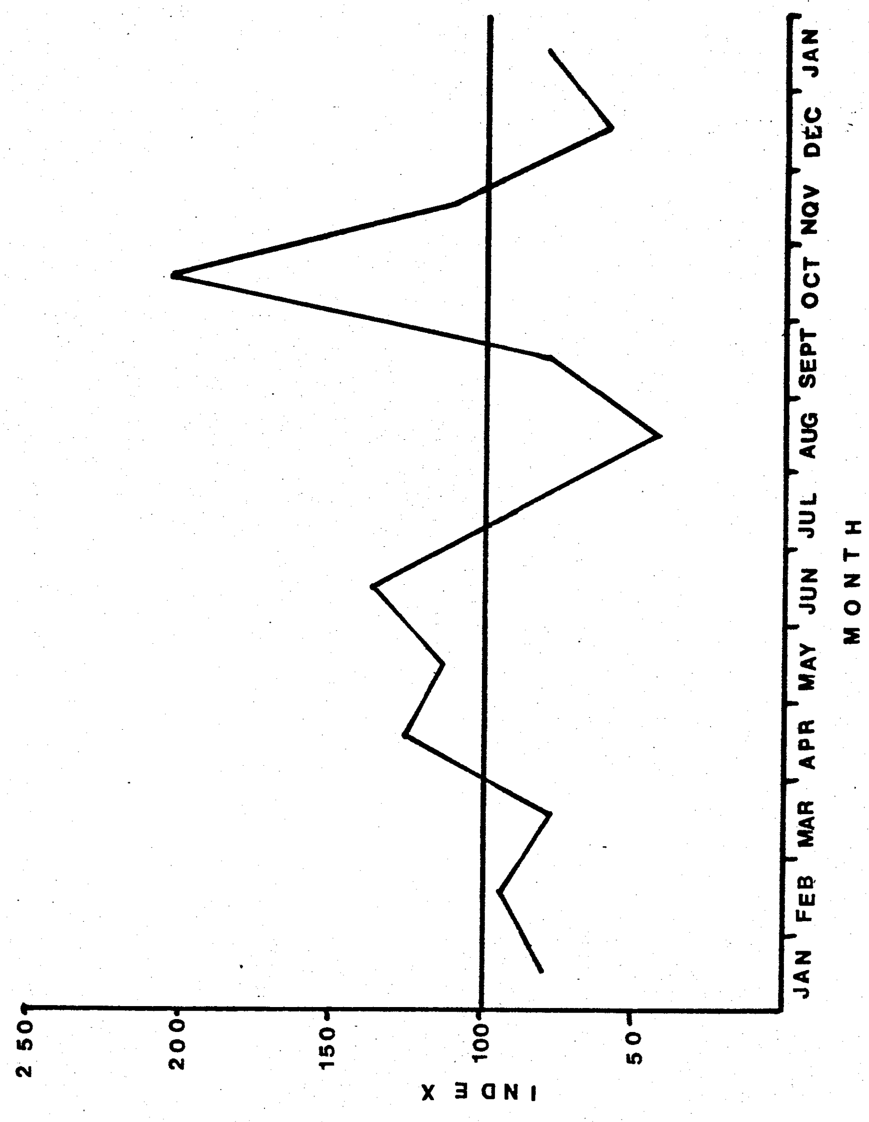
The period from Advent to the Baptism of Our Lord lasted for six to seven weeks, began between 27 November and 3 December and ended on 13 January. The second period of prohibition ran for ten weeks, and oscillated between 18 January and 2 May. With Easter at its earliest possible date, marriages were prohibited from solemnisation between 18 January and 29 March, while at its latest, it covered the period from 21 February to 2 May. Rogationtide, like the previous ban, was dependant upon the timing of Easter. This period lasted for three weeks, began four weeks after Quasimodo, and oscillated between 26 April and 20 June. With Rogationtide at its earliest it covered the period from 26 April to 17 May, while at its latest it ran from 30 May to 20 June.[10]

After the Reformation there was no legal basis for these prohibited periods to continue since the 1575 Conventicle asked all Bishops to announce that marriages could be solemnised at any time during the year.[11] However, the striking impact of the troughs in the months of March and December, especially in the sixteenth and early seventeenth centuries are indicative of active discouragement replacing the earlier prohibition.[12]

It has been suggested that the seasonality patterns due to ecclesiastical control would break down during the Interregnum, as prior to this date the religious mask hid the true seasonality.[13]

Although Lent and Advent seem to have been well observed periods of active discouragement as late as the mid-seventeenth century this was not the case during the Interregnum, when the indices rose sharply for the months of March and December.(Figure 7.2)

Figure 7.2 Seasonality patterns during the Interregnum



Source: Aggregative analysis for seven Isle of Ely parishes

The Interregnum is, moreover, the only period when the month of March was not consistently the lowest index throughout the two hundred year period. However, as the index for the month of March was lower for each of the fifty year periods in the seventeenth century than for the Interregnum, the seasonality patterns for the Isle of Ely are indicative of marriages being actively discouraged after the Interregnum, although not to the same extent as prior to the mid-seventeenth century.

Looking at the pattern of marriages solemnised during the Church's period of active discouragement poses some interpretative problems since these three periods oscillated backwards and forwards between 27 November and 20 June. Advent Sunday, Septuagesima and Rogation Sunday are moveable dates, being dependent upon the day on which Christmas or Easter fall. Although the beginning of Advent only varies by six days, the timing of Septuagesima and Rogation Sunday can vary be as much as thirty five days. Table 7.2 shows the maximum and minimum number of days in each month that were clear for the solemnisation of marriage if the actively discouraged periods were being followed.

Table 7.2 Days within each month that were clear for the solemnisation of marriage.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Min	4	0	0	0	9	10	31	31	30	31	26	0
Max	18	21	2	27	27	30	31	31	30	31	30	2

Source: The family reconstitution of March

Notes: Cheney (1945) was used to obtain the relevant dates.

In order to establish whether the marriages solemnised between 27 November and 20 June occurred during the actively discouraged periods or were crowded into the non-prohibited days from 13 January to Septuagesima, and Quasimodo to Rogation Sunday, involves the relatively simple, but time consuming process of checking each marriage date within the register against Cheney's calendar of dates.[14]

Table 7.3 looks at the monthly pattern of marriages solemnised during the actively discouraged periods for both Haddenham and March by half century. The number of events recorded in each of the actively discouraged periods, in each fifty year period from 1550-1750 is tabulated below.

Table 7.3 The pattern of marriages during the actively discouraged periods.

Period	Total Marriages	Jan	Feb	Mar	Apr	May	Jun	Nov	Dec	Total
Haddenham										
1550-99	246	7	14	3	4	4	0	1	6	39
1600-49	611	7	14	4	5	15	1	2	14	62
1650-99	277	5	10	14	27	10	4	1	16	87
1700-49	496	26	26	23	29	15	5	3	26	153
Monthly totals		45	64	44	65	44	11	7	62	342
March										
1550-99	355	4	10	2	6	20	7	4	10	63
1600-49	486	5	12	3	10	11	6	1	4	52
1650-99	746	29	53	37	48	47	15	2	46	277
1700-49	731	38	59	47	66	43	23	3	60	339
Monthly totals		76	134	89	130	121	51	10	120	731

Source: The family reconstitution data for March was used
The KDEM'D parish registers were used for Haddenham

Note: A transcript of the Haddenham parish registers was entered into the computer by means of an optical character reader, a Kurtweiler data entry machine hence the term KDEM'D data.

The months most affected by the ecclesiastical feasts of Lent and Advent are March and December respectively. Table 7.3 clearly demonstrates that the pre-reformation ecclesiastical controls were still having some impact in the late sixteenth and early seventeenth centuries in both parishes. However, the substantial increases in the number of marriages in the months of March and December after the mid-seventeenth century are indicative of religious conventions breaking down after the Interregnum.

7.4 Economic influences

Although ecclesiastical constraints may account for the troughs in March and December, other factors, including economic restraints, have been shown to influence the peaks in early summer and late autumn and the equally low trough in late summer.

Kussmaul has argued that 'the seasonality of marriage clearly reflects the distinctive pattern of rural work'[15] while Wrigley and Schofield have stated that the marriage patterns reflect the exigencies of the changing seasonal demand for labour in agriculture, 'with autumn and spring/summer peaks reflecting the slack seasons after the gathering of the 'harvest' of crops and grazing animals respectively.'[16]

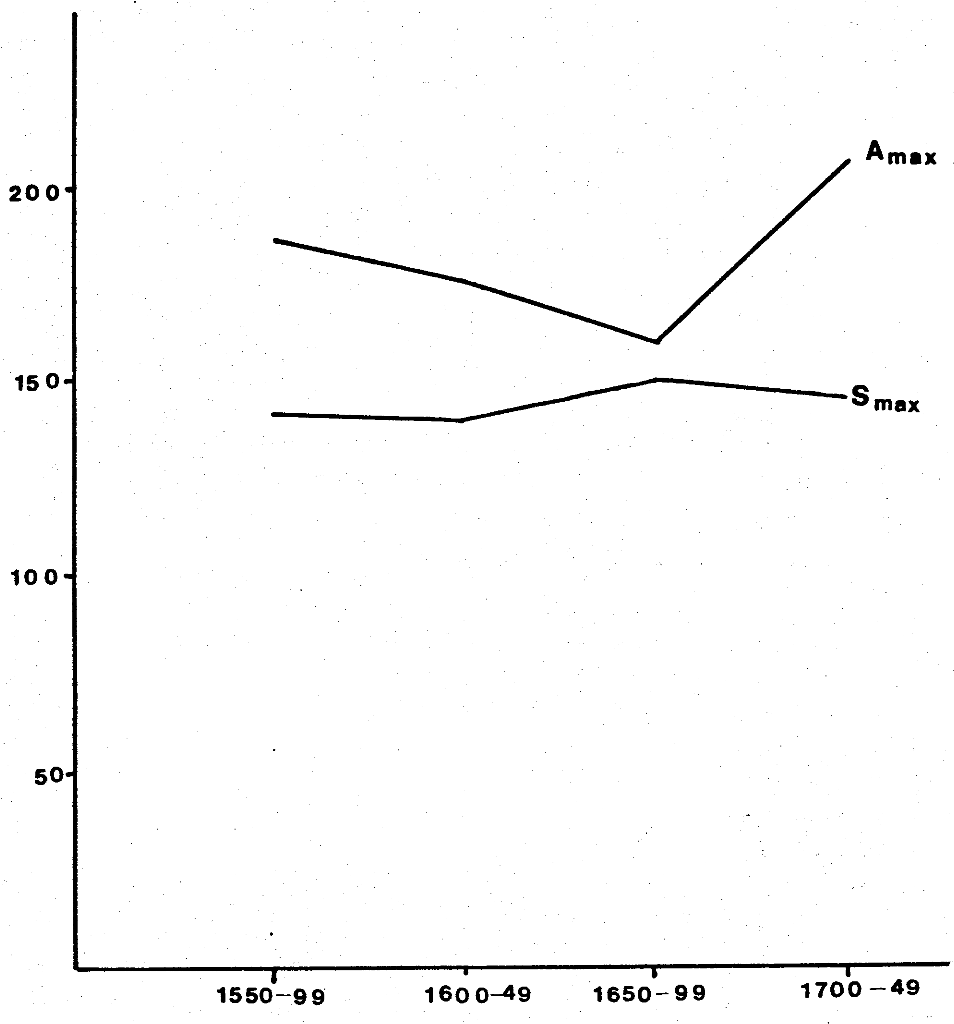
If autumn and spring/summer peaks suggest arable and pastoral dominated economies respectively, it makes sense to look at these two seasonal variables in greater detail for the Isle in each of the fifty year periods from 1550-1750. (Table 7.4 and Figure 7.3)

Table 7.4 Spring/summer and autumn maxima by fifty year periods

Period	S_{max}	A_{max}	N
1550-99	143 (June)	186 (Oct)	2362
1600-49	141 (Apr)	176 (Oct)	4224
1650-99	152 (Apr)	161 (Oct)	4750
1700-49	148 (Apr)	204 (Oct)	6203

Source: Table 7.1

Figure 7.3 Spring/summer and autumn maxima by fifty year periods



Source: Table 7.1

The broad overall pattern is of high indices for both the spring/summer and autumn maxima, with the latter being consistently higher than the former for corresponding periods. While the spring/summer maxima remains relatively constant throughout the 200 year period, the autumn maximum decreases from the mid-sixteenth to the late seventeenth century before rising sharply in the early eighteenth century to a point above its earlier height.

Since fifty year periods mask the point at which change occurred, spring/summer index and autumn index were calculated for each twenty year period from 1561-1760 inclusive. Table 7.5 and Figure 7.4 clearly demonstrate the change within these maxima over the period in question.

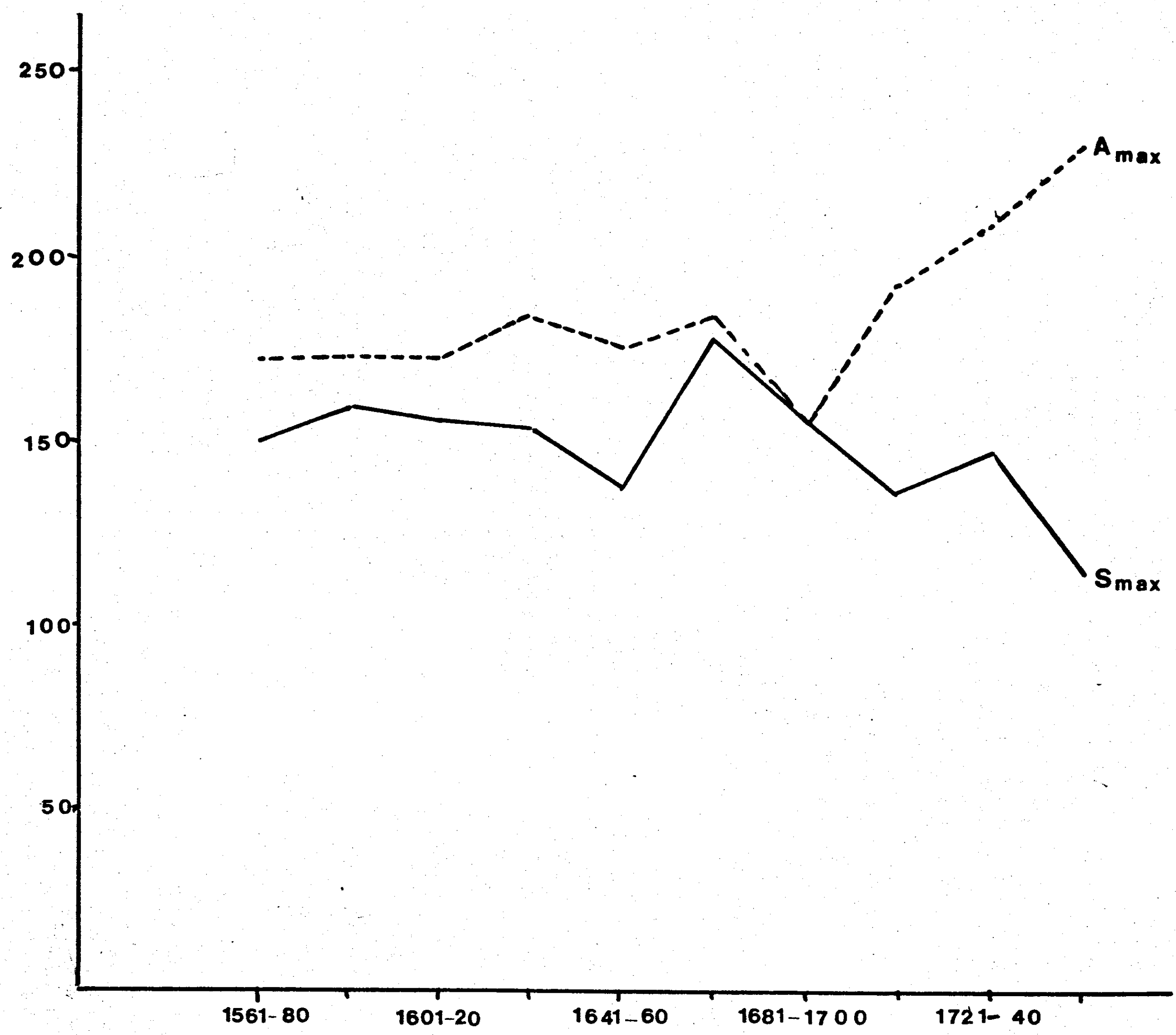
Table 7.5 Spring/Summer maxima and autumn maxima by twenty year periods

Period	S_{max}	A_{max}	N
1541-60	Apr (167)	Oct (213)	81
1561-80	June (150)	Oct (171)	963
1581-1600	May (159)	Oct (173)	1404
1601-20	May (155)	Oct (171)	1689
1621-40	Apr (152)	Oct (183)	1715
1641-60	May (137)	Oct (175)	1394
1661-80	Apr (177)	Oct (183)	1876
1681-1700	Apr (155)	Oct (155)	2207
1701-20	Apr (136)	Oct (191)	2626
1721-40	Apr (146)	Oct (208)	2586
1741-60	Apr (122)	Oct (230)	2602

Source: Aggregative data for seven Isle of Ely parishes

Note: For the period 1541-60, 81 marriages were solemnised in four parishes. Due to the small numbers involved bias might be in evidence.

Figure 7.4 Spring/summer maxima and autumn maxima by twenty year periods



Source: Table 7.5

The trends in the autumn and spring/summer maxima run basically parallel from 1561-1620, move in a countercyclical fashion until 1640 before falling during the period 1641-1660, with the spring/summer maxima attaining its lowest point since the beginning of registration. During the following twenty year period the spring/summer maxima rises sharply and then falls, along with the autumn maxima to an index of 155. From the eighteenth century the movement of these two indices diverge rapidly, with the autumn maxima rising to a point considerably above its former height while the spring/summer maxima falls to its lowest ever level.

Kussmaul has argued that changes over time in the proportion of marriageable youths entering marriage from farm service, with its regionally specific hiring date of Michaelmas in the east, rather than farm day labouring was the major influence on the cycle of October marriages in rural eastern parishes,[17] hence causing the index of October marriages to fall in the mid-seventeenth century, and rise towards the mid-eighteenth century. However, hiring dates were not arbitrary, they occurred in the slack seasons immediately following the peak in the years work. With farming on the undrained fenland being basically animal husbandry,[18] in which crops played an important, but albeit subsidary part, the slack period following the years work would be in the late spring. As the timing of Michaelmas as the hiring date for Cambridgeshire was based upon settlement papers from the upland part of the county with no data in evidence for the Isle of Ely,[19] and since, 'in areas specialising in grazing, such as the fens of Lincolnshire the annual time of hiring and mobility was generally May Day,'[20] one would expect the annual hiring fairs within the Isle to correspond with those in the Lincolnshire fens. Consequently, Tables 7.4 and 7.5 with Figures 7.3 and 7.4 pose some interpretative problems.

Kussmaul has shown that a parish possessing a high autumn index coupled with a low spring/summer index is indicative of an arable based economy, a high spring/summer index coupled with a low autumn index is suggestive of a predominantly pastoral economy, while a spatial unit with **both** a low spring/summer and autumn index is indicative of an industrial area.[21]

However, the pattern evident in the Isle, especially prior to the eighteenth century, fits into none of these three categories as it possess **both** a high spring/summer and autumn index, with the highest index in each corresponding period being the autumn maxima.

Prior to drainage, farming on the undrained fenland was basically animal husbandry, hence, the area should be expected to exhibit the characteristics of a predominantly pastoral economy and possess a high spring/summer index coupled with a low autumn index. After drainage a high autumn maxima coupled with a low spring/summer maxima would be expected due to an increasing amount of agricultural land becoming available and the divergence of the two indices after 1700 is suggestive of the growing influence of drainage.

So what was unusual about the Isle of Ely that caused a higher autumn than spring/summer maximum in a predominantly pastoral economy prior to drainage?

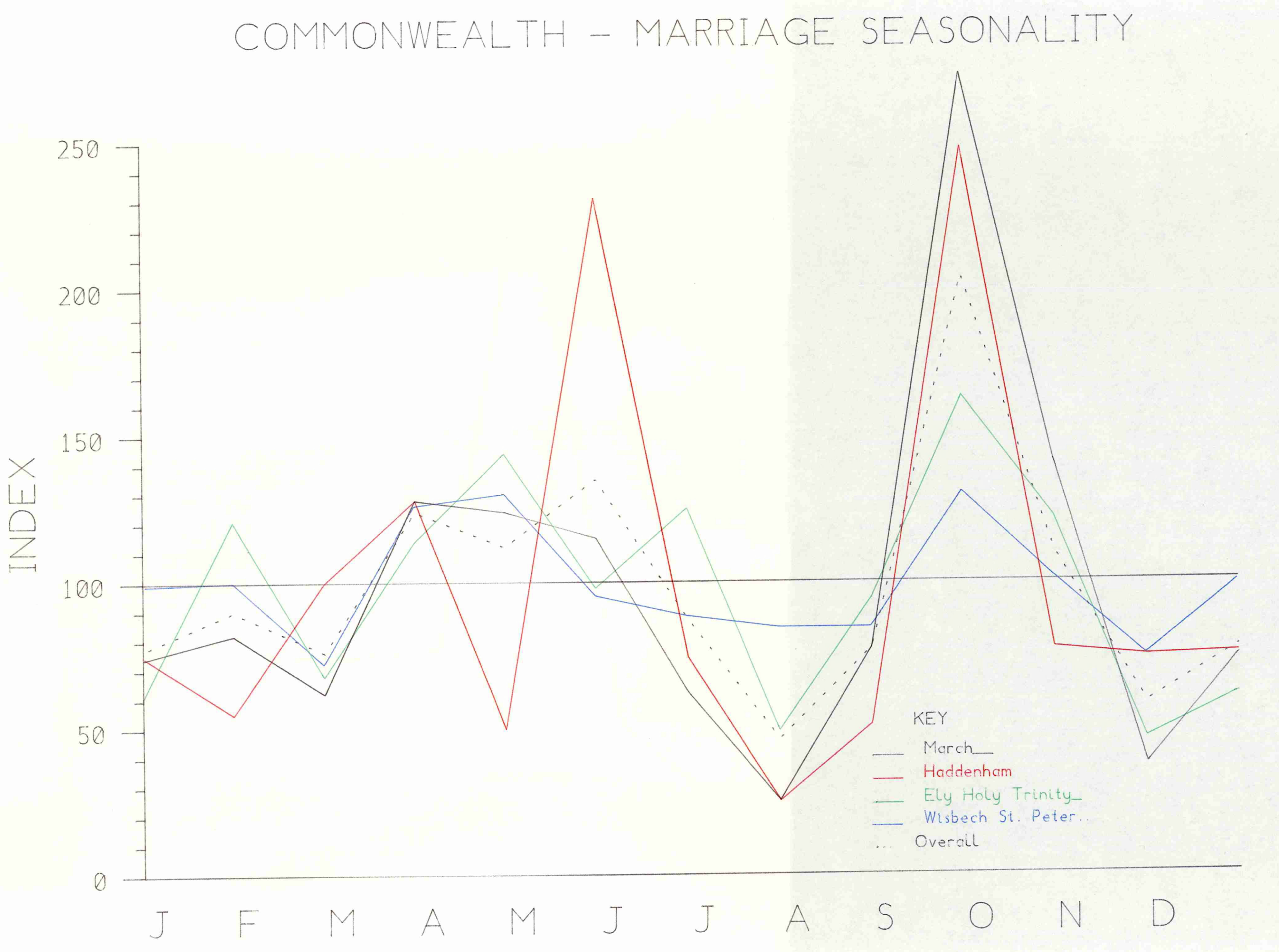
7.5 Local Customs

As we have seen, the fundamental aspects of ecclesiastical discouragement and economic constraints played a large part in the monthly marriage seasonality patterns. However, the extent to which local and accidental variations such as specific aspects of land utilisation, the degree of control of the local incumbent, the size of the community, or the level of extra-parochial marriages modified the seasonal pattern will now be considered.

The influence exerted by the local incumbent is an obvious local factor that requires consideration.

It has already been noted how the pre-Reformation ecclesiastical controls were still having some impact prior to the Interregnum. During the Interregnum, ‘dissent had been able to spread in relative freedom’[22] and the religious mask had slipped revealing the true picture of seasonality. (Figure 7.5)

Figure 7.5 Marriage seasonality during the Commonwealth period.



Source: Aggregative data for seven Isle of Ely parishes

Figure 7.5 demonstrates that throughout the Commonwealth period the index for the month of March was **higher** than the index for August and December. This was in complete contrast to the seasonality pattern evident in Table 7.1, when the index for March was lower than any other for corresponding periods and is indicative of the Commonwealth period alone revealing the true picture of seasonality.

After the Restoration, the religious mask was once again modifying the seasonal patterns primarily during the month of March, which is the month most affected by Quadragesima Pura. Furthermore, Quadragesima Pura is the only period within the present established Church when marriages are still actively discouraged by many incumbents, even though their is no legal basis for this.[23]

In order to discover the extent to which Quadragesima Pura was kept during the sixteenth to eighteenth centuries, the computerised data for the the parishes of March and Haddenham were used. (Table 7.6)

Table 7.6 Marriages in Quadragesima Pura

Period	Haddenham			March		
	N	%	Total Marriages	N	%	Total Marriages
1550-99	0	0.0%	246	2	0.6%	355
1600-49	4	0.7%	611	6	1.2%	486
1650-99	14	5.1%	227	24	2.6%	746
1700-49	29	5.8%	496	53	5.7%	931
1550-17 49	47	2.9%	1580	85	3.4%	2518

Source: Family Reconstitution data for March was used
The KDEM'd parish registers were used for Haddenham

Table 7.6 shows the number of marriages solemnised during the forty-six days of Quadragesima Pura. This period was generally avoided within the established Church prior to the mid-seventeenth century, with only twelve couples breaking the pre-Reformation conventions. The strength of observance of Quadragesima Pura declined during the second half of the seventeenth century, with the degree of decline between the two spatial units of March and Haddenham being particularly interesting. A higher degree of decline would have been expected in the larger communities since ecclesiastical control should have been weaker. March, however, was not only larger than Haddenham but also a market town, hence the difference between these two communities is indicative of the local incumbent exerting some influence upon the demographic regime in the community of March.[24]

However, the most striking aspect of marriage seasonality during the Interregnum was not so much the absence of the chasms of March and December, but the substantial peak in October. This was not a totally new phenomenon since a high autumn maxima occurred during the early sixteenth century, a period when the fenland was still in its undrained state and had a predominantly pastoral economy. Animal husbandry was the basis of fenland farming prior to drainage,[25] while its small arable base provided hay for winter feed as well as a small amount of corn. However, this small arable base seems insufficient to alter the demographic regime to any great extent prior to drainage.

So what factors related to the fenland economy might have contributed to the phenomenon of an autumn maxima?

If the monthly indices reflect the seasonality of work the autumn maxima might reflect the area's economic specialisation and consequential development of wider markets based upon the local resources.

The whole structure and economy of the Fens prior to the completion of the great drainage works was determined by the superfluity of water brought into it. In 1724 Defoe summed up the situation perfectly when he stated that 'in a word, all the water of the middle part of England that does not run into the Thames or Trent comes down into these fens.'[26] The varied surface of the fen and the state of drainage produced a corresponding variety of land utilisation, and as such supported a way of life quite different to that in other areas of England with two of the main supports of the economy of the undrained fenland being freshwater fish and wild fowl.

Lake and river fish have always been a food source for man, and the Isle of Ely communities were able to crop not only the non-migratory species such as bream, perch, barbel and pike but also migrants, such as eels, on their seasonal runs. As early as the Anglo-Saxon period fishermen were lamenting that they were unable to catch enough fish to meet demand[27] and given the narrow range of generally available fresh foodstuffs and especially the coincidence of Lent with the last and the most putrescent of the winter store of salted meat, this is readily understandable.

Fishing was also an important characteristic of the Tudor economy, with a new era of pisciculture developing, centred no doubt on the ordinances of 1548 which imposed three meatless days a week in addition to Lent,[28] a time of one of the highest autumn maxima in the undrained fenland.

Hence its variety of fish gave opportunities for taking advantage of the wider regional and national markets. Even after drainage, fish were plentiful in the meres and drains and could be netted in quantities large enough to supply the needs of large towns and cities, including London. Defoe, in the early eighteenth century described how he saw fish being transported live from the Isle of Ely to the London market.[29]

However, the most prolific fish in the meres and drains of the Isle of Ely has always been the eel.[30] Darby's account of the medieval fenland illustrates the extreme importance of fisheries in the meres and streams,[31] with the yearly eel catch, alone, being stated in thousands and amounting to a vast crop.[32]

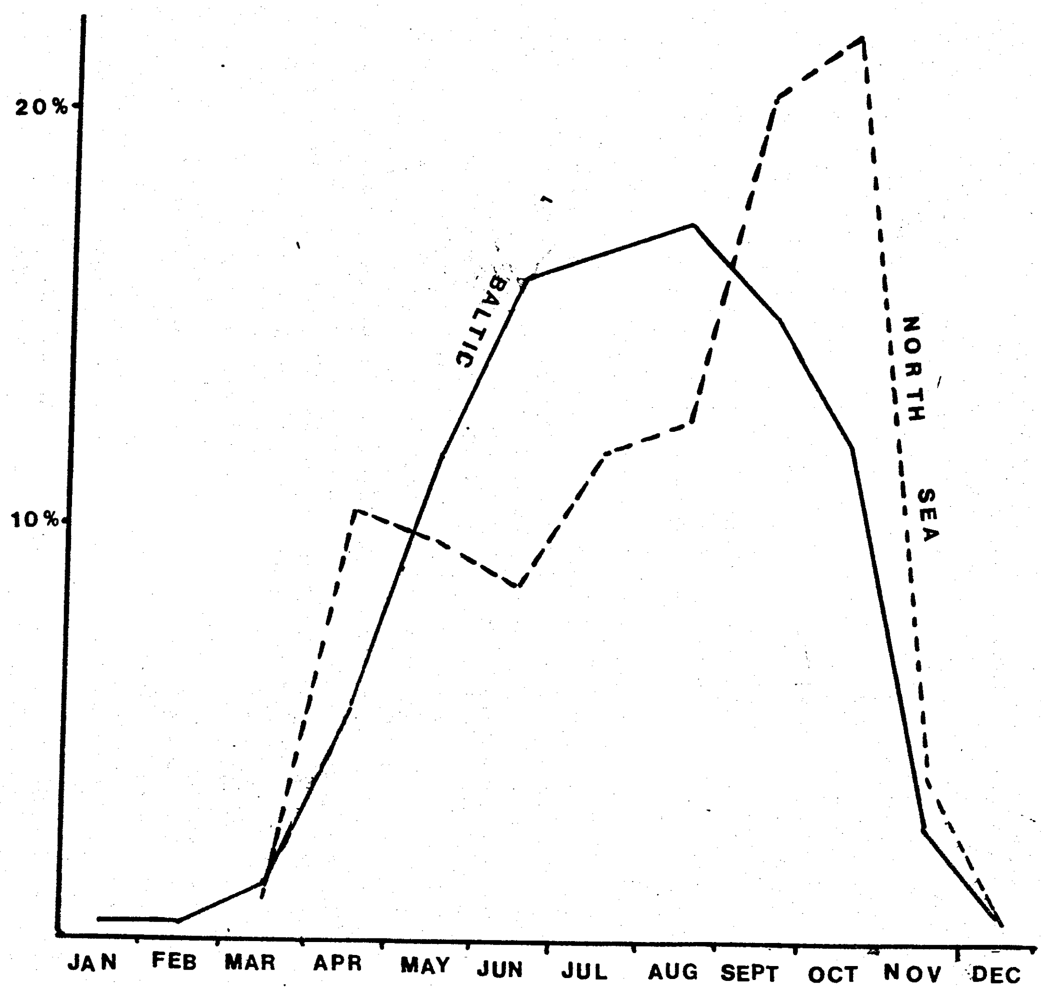
Eels which are migratory only at the beginning and end of their mysterious life-cycle,[33] thronged the fresh waters of the Isle of Ely in such numbers that they came to be used as a standard measure of a fisheries value at the time of the Domesday survey. The seasonal variation in the abundance of eels was observed by Isacc Walton in 1653, when he stated that ‘It is granted by all men, that Eels, for about six months (that is to say, the six cold months of the year) stir not up and down, neither in the Rivers nor the Pools in which they are.’[34] Furthermore, recent twentieth century fishing surveys indicate that the present day harvesting of eels caught within the temperate zones shows some considerable seasonal variation, especially in the areas bordering on the North Sea, with the catch distribution in the rivers resembling that of the coastal waters.[35] ‘Among the factors contributing to this variability are the unrelated peaks in activity seen at various stages of the eel’s life cycle.’[36] These peak catches coincide with the highest water temperatures, and thus occur at the height of summer, dropping to practically nothing between December and March. (Figure 7.6)

Figure 7.6 Graph of eel fishing

See overleaf

Source : Tesch (1977) p251

Figure 7.6 Graph of eel fishing



Source : Tesch (1977) p251

As this graph so aptly demonstrates, the monthly catches of silver eels, those common to the Isle of Ely, causes a fairly marked displacement of the catch maximum to the autumn and coincides with the autumn maxima evident within the marriage seasonality patterns of the communities within the Isle of Ely.

As well as fishing, fowling was also an important aspect of the fenland economy. The variety of water fowl within the Isle of Ely was as remarkable as its quantity, and this prolific supply was augmented in the autumn by vast hordes of migratory birds coming from the north continental mainland. Many fen monasteries in the thirteenth century were asked to supply the king with wildfowl for his feasts,[37] while Piercy's household Book of 1612[38] quotes prices for all Fenland fowl, that included mallard, teal, swan, cranes, herons, bittern, knots, stints, gowits, plovers and larks. Furthermore, in the early eighteenth century, as many as 2000-3000 fowl a week were being taken to the London markets during the late summer months.[39]

Apart from fishing and fowling the by-products of the fen were much in evidence within its economic specialisation. The value of the summer usage of the fen can be judged from the way in which each parish on the edge of the fens in the upland part of the county of Cambridgeshire, extends as a strip into the fens.[40] These other by-products of the fenland, harvested in the late summer or early autumn, required little labour other than its collection and transportation and played a large role in the region's economic development.

Sedge, one of the many uncultivated crops of the undrained fenland, traditionally supplied a thatching material of durability far exceeding that of either cereal straw or reed. Cut in late summer or early autumn, its value was recognisable by the fact that conditions governing its use included limitations upon the commencing date of cropping and the employment of assistants.[41] Reed has a long history of economic use throughout the fenland with evidence to indicate that it had more than local usage. ‘Not only was the thatching material carried by boat to neighbouring townships, but in times before the prevalence of daily papers, the dead leaves were [used] as kindling material.’[42] Two other crops can be discussed more briefly. Willow supplied a widespread, if not diffuse, industry with its agricultural, horticultural and domestic uses. However, there is no evidence to suggest that the bulrush ever formed more than a local crop.

Up until the early modern period, the wealth of England rested securely upon its wool production with a need of woad for dying it. Woad was grown in the fens in such large quantities that there was a substantial export of it through the Port of London during the sixteenth century.[43]

While Fenland Cambridgeshire, prior to drainage, was a predominantly pastoral economy its natural by-products were certainly used to its economic advantage. It is doubtful that any one of these factors taken in isolation would have affected the demographic regime. However, taken together it is little wonder that the Fens exhibited the phenomenon of an autumn maxima in a predominantly pastoral economy.

7.6 Conclusion

The seasons had a distinctive effect upon the timing of marriages throughout the year. In its overall shape, marriage seasonality was fairly static, with bi-modal peaks in the spring and autumn separated by tri-modal troughs in March, August and December. Although it has been shown that these seasonal patterns reflected not only ecclesiastical constraints but also the changing seasonal demand for labour, it has been argued that they were also subjected to, and influenced by local factors and customs. These local variations modified the seasonal patterns with the autumn maxima most probably due to the delicate adjustment of the economy to the topography of the area.

The marriage seasonality patterns of the Isle are suggestive of rural industries being generated by the fenland by-products. While these non-agricultural activities may have been initially viewed as a means of augmenting the family income, the marriage seasonality patterns suggest that by the late sixteenth century, they had begun to assume an importance all of their own. This was undoubtably because the techniques required for the collection and transportation of these fen by-products or the manufacture of articles from them could be easily assimilated by those for whom agriculture failed to provide a certain or continuous employment. In the pastoral economy of the Isle prior to drainage, farming was less labour intensive than in the corn growing upland part of the county. Hence there would have been time to engage in the subsidary occupations associated with its by-products which played a large role in the economic development of the region.

Kussmaul has argued that that there were three distinct characteristics evident within the marriage seasonality patterns of England. A predominantly pastoral economy possesses a high spring/summer maximum index coupled with a low autumn maximum, while an arable based economy showed a high autumn maximum coupled with a low spring/summer maximum, and an area with **both** a low spring/summer and autumn maximum was indicative of an area which was basically industrial. However, during the course of this research, a fourth characteristic of seasonality has been discovered, one in which there is a high index in **both** the spring/summer and late autumn maxima.

This attribute of marriage seasonality patterns may well be characteristic of the ‘drowned’ economy. However, more research needs to be completed on other similar areas such as the Essex marshes, Lincolnshire Fens and the Somerset Levels before the seasonal pattern found in the Isle of Ely can be attributed to those areas which were frequently inundated with water.

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1. Malthus (1798)

2. Wrigley & Schofield (1981) p298

3. Kussmaul (1985A)

4. Bradley (1970) p18-24

5. Edwards (1977) p23-7

6. Wrigley and Schofield (1981) p298-303

7. Annual totals for the seven parish registers are given in Appendix 3.2

8. The inaccuracies in this type of approximation are negligible.

9. Wrigley & Schofield (1981) p299-300

10. Cheney (1945)

11. See Burn (1824) Vol 2 p467-8.

12. Marriages are still actively discouraged by Anglican incumbents during Lent. (Personal communication with Canon Henry Stapleton, Canon of Rochester).

13. Kussmaul (1985A)

14. Cheney (1945)

15. Kussmaul (1985B) p1

16. Wrigley & Schofield (1981) p303

17. Kussmaul (1985A) pp105-11

18. See Wreets Smith (1932) pp69-92 and Thirsk (1953). The account of fenland farming by Wreets-Smith is based on evidence derived from Crowland Manor whilst Thirsk's is based on evidence derived from the parishes of Holland in Lincolnshire.

19. Personal communication with Professor Ann Kussmaul

20. Kussmaul (1985A) Table IV.2 p105 demonstrates that Michaelmas was the hiring dates during the seventeenth - nineteenth centuries in Cambridgeshire and Norfolk from settlement papers.

21. Kussmaul (1985A)

22. Spufford (1974) p189

23. See footnote 12

24. After the Restoration a vigorous attempt was made to revive the old Church discipline in the Diocese of Ely by Bishop Wren. The incumbent of March followed this new move and on April 18th 1661, Simon Goodman of March was presented to the Grand Jury for 'suffering his son and other boys to play in his outhouse upon the Sabbath Day.' (Plea Rolls F2)

25. See Thirsk (1953) who states that livestock feature prominently in many documents and in no other part of England were common rights possibly so important.

26. Defoe (1724)

27. Germonsway (1939) pp26-8 The Anglo-saxon fishermen of Aelfries Colloquoy caught eel, pike, trout and laprey plus two unidentifiable species.

28. The motive here was not one of religious observance but a civil 'policy' designed to encourage sea-fishing and so provide a source of recruits for the Navy.

29. Defoe (1724)

30. See for example Bede who stated that the Isle of Ely takes its name from the quantities of eel in its waters.

31. Darby (1973) p36

32. See Chapman (1907)

33. Tesch (1977) p251

34. Walton (1653) p190

35. See Tesch (1977) who states that in Holland in this present day and age the greatest number of eels are still caught during August.

36. Tesch (1977) p251

37. Chapman (1907)

38. Darby (1973) p31-6

39. Defoe (1724)

40. Ordnance survey maps of Cambridgeshire

41. See for example Chapman (1907) who states that John Bantelig was fined 12d for 'removing sedge before the feast of St John against the general ordinance.'

42. Goodwin (1978) p148

43. Hurry (1930)

Chapter 8

Conclusion

The last three decades have witnessed considerable progress within the field of historical demography and the pioneering work of the Cambridge Group for the History of Population and Social Structure has been responsible for the development of techniques for calculating demographic characteristics of past populations. However, while demographic studies provide an insight into the behaviour of a community, this analysis of the reconstituted population of March from 1550-1750 poses at least as many questions as it answers.

The task of analysing the demographic and socio-economic characteristics of March was a time-consuming process, and while it could be argued that the time spent in completing the family reconstitution of March was ill-repaid by the quality of the results obtained, it was necessary, in order to become aware of the forces which shaped this community from 1550-1750. However, this exploration into the demography of a community within the Isle of Ely was a necessary step to our understanding of a 'drowned' economy in early modern England.

This demographic analysis of March from 1550-1750 is dependent upon the methodology and sources pertinent to family reconstitution studies. Based on both aggregative and nominative data, this study used extraneous sources in order to enhance the quality of the socio-economic data within the parochial registration system. However, even with the inclusion of the extra socio-economic data this analysis is still restricted by the lack of consistency of socio-economic recording. Furthermore, problems of bias were in evidence in this socio-economic data.

The general conclusions on occupation were complicated by the dominance of the extraneous sources and the fact that the majority of family reconstitution forms had no occupational data. This latter group, because of its size and probable diversity may mean that the recovered occupations are not representative of the community as a whole.

The changing occupational structure of March during the period 1550-1750 was dependant upon such external influences as its decline as a minor port, the degree and depth of the frequent inundations, the state of the drainage systems, and its changing role from a rural to an urban community. There was evidence of an increase in occupations based on the production and retailing of diverse finished manufactured products, products which were usually the most responsive to a greater demand. Also, underlying this slow process of urbanisation, was the growth of population which intensified the demand for essential consumer goods.

However, the proletarianisation of the labour force affected the survival and growth of families in more ways than can be discussed by looking at occupational labels alone while the development of March was of a longer term nature than this discussion has allowed.

A great deal has been written about the potential pitfalls of demographic analysis using family reconstitution data and while family reconstitution studies are more proof against deficiencies than the simpler methods of analysing parish registers, technical problems regarding the reconstitution of March became apparent as the demographic analysis neared its closing stages. These difficulties characterised by the considerable levels of inmigration as well as the limited set of christian names caused problems when trying to assign baptisms to those couples heading a family reconstitution form.

A variety of sources, of both a static and aggregative nature, were used in order to evaluate the course of population change in the Isle of Ely. The peculiarities of the topography of the fens produced density and distribution results that were provocative as well as informative.

As the population grew so the pressure of the population dynamics on the economy became apparent. The expansion of the population of fenland Cambridgeshire may well parallel other parts of the country, but unlike the majority of other communities, the ultimate limit of land available for settlement was not the parish boundary but the seasonal rise and fall of the fresh and salt water inundations.

Fenland Cambridgeshire maintained its own distinctive pattern of population levels and change and the natural environment, the local opportunities for employment and settlement combined in varying and often conflicting ways to mould the distribution and movement of the population in the Isle of Ely.

Although population levels rose in the deep fen parishes during the second half of the seventeenth century the extent to which the population grew in specific areas of fenland Cambridgeshire still requires more detailed study. It is evident that population grew at different rates in different settlements and the impact of infant mortality, endemic and epidemic disease varied according to the socio-economic composition, as well as the topography of the locality in question. The ravages of endemic disease were more ferocious than in most other parts of early modern England. This is not to argue that other parts of England were a haven of cleanliness and good health, but certainly it was healthier in most other parts of England than in the majority of parishes within the Isle of Ely. In particular, the effect of the drainage schemes could, paradoxically, be seen as a dominant force on the deterioration of the health and life expectancy of the local inhabitants.

Much has been written on infant mortality levels with few, if any, decisive conclusions as to why infant mortality varied so widely. The fact that there is no simple explanation of the high levels of the infant mortality rates indicates the complexity of the phenomenon involved. The interactiveness of biological, physiological, as well as socio-economic factors probably had some bearing upon the high endogenous and exogenous infant and child mortality levels evident in the fens. Furthermore, water borne diseases would have added to the toll of death and such infections as typhoid and dysentry diffused more rapidly where rivers and streams facilitated their spread.

The infant burial rates evident in March were much higher than those of other Cambridgeshire communities and far higher than some of the larger towns of southern England with the exception of some London parishes, suggesting that the draining of the fens and the concomitant rise in the levels of population created a less than healthy environment. Furthermore, the variation in the infant mortality levels, with respect to the height of the terrain, is a striking aspect of this research.

The infant mortality analysis includes the consideration of both endogenous and exogenous levels of infant mortality. The implications of the mothers witholding colostrum, that part of the mothers milk which provides the child with a natural immunological protection, coupled with the possible effects of the mothers' drug abuse on the unborn child and nursing infant could account for part of the variable patterns of infant mortality within March.

However, the sex-specific mortality patterns evident in March, especially with regard to socio-economic status and multiple birth events for single sex twins are difficult to account for. Whilst it would appear that the sex-specific infant mortality was due to either female infanticide or wilful neglect, as is suspected to have been the case at Willingham, it is a question that is still open to discussion.

Any investigation of the causes of infant mortality are hampered by the paucity of evidence on aspects of child care, nursing and weaning customs of any early modern fenland Cambridgeshire community. The interpretation of infant mortality trends and causes is further complicated by the potential causal influences since relevant factors include not only the role of the environment but also human choice and physiology factors acting through the marriage age and the fecundity of couples.

In any demographic analysis age at first marriage is taken as the key demographic variable. While family reconstitution data provide unrivalled opportunities to study English marriage ages the analysis of marriage age data for March, highlights a number of limitations on the use of reconstitution marriage ages.

The high mobility of traditional society and the problems of representativeness mean that that it is difficult to know how representative of the whole society are the calculated ages at marriage. The nature of the available data on marriage ages may be responsible for many of the characteristics found. Consequently, it is not absolutely clear to what extent male marriage age patterns is a product of the communities socio-economic characteristics or simply a reflection of the behaviour of a small non-representative section of the population with known ages.

While the age at which any individual married can be related to the general economic, social or family circumstances, these are difficult to demonstrate, if in the last analysis, the decision turns out to be a suitable partner becoming available. Hence, there are problems involved in determining economic influences on marriage ages since this demographic variable is ultimately determined by human choice.

The seasons had a distinctive effect upon the timing of marriages throughout the year with the seasonal patterns reflecting not only ecclesiastical constraints but also the changing seasonal demand for labour. Furthermore, they were subjected to and influenced by local factors. These local variations modified the seasonal patterns with the autumn maxima most probably due to the delicate adjustment of the economy to the topography of the area, with the market opportunites allowing the inhabitants of the Isle of Ely communities to exploit the local natural resources.

Kussmaul has argued that that there were three distinct characteristics evident within the marriage seasonality patterns of England. However, during the course of this research, a fourth characteristic of seasonality was discovered, one which portrayed both a high spring/summer and high autumn maxima. This attribute of marriage seasonality patterns may well be characteristic of the 'drowned' economy. However, more research needs to be completed on other similar areas such as the Essex marshes, Lincolnshire Fens and the Somerset Levels before the seasonal pattern found in the Isle of Ely can be attributed to those areas which were frequently inundated with water.

8.1 Summary

While it has become something of an overworked truism that every age is to some extent both an era of change and an era of continuity, the period from 1550-1750 certainly qualifies as a period in which the forces of change were in evidence within March.

Although it was not a period of economic take off, it was a period in which the foundations of social and economic change were being laid, evolving as a result of the interplay between the changes in population and socio-economic changes spurred on by drainage.

Much of the available evidence suggests that March was a distinct community in which a local economic system was maintained. The underlying structure of March, as with all fenland communities, was determined by the superfluity of water that went into it. The drainage schemes affected the local landscape. While the initial drainage schemes were successful, the fens were soon as wet as ever. Nature restored the balance, with each success in draining being followed by peat shrinkage and a subsequent falling soil level which caused the rivers to overflow their banks with increasing regularity.

The findings of this research are dependent, to a large extent, upon inference and assumptions implicit in the approach. No great revolutionary findings result and while many of the conclusions are negative this analysis should be useful to those who pursue a demographic study in a 'drowned' economy, if only as an indicator of the pitfalls which can occur and seem to multiply in inverse proportion to the scale of the study. Furthermore, proof for hypotheses put forward to explain the various trends and findings are not incontrovertible but this is true of all social science research.

Hence, to what extent March was typical of other 'drowned' economies can only be guessed at here. It can only be hoped that these findings stimulate further research into the 'drowned' economies. Research on these areas is paramount if we are to know whether the anomalies which have emerged in this study are peculiar to the Isle of Ely in general, March in particular, or are replicated elsewhere.

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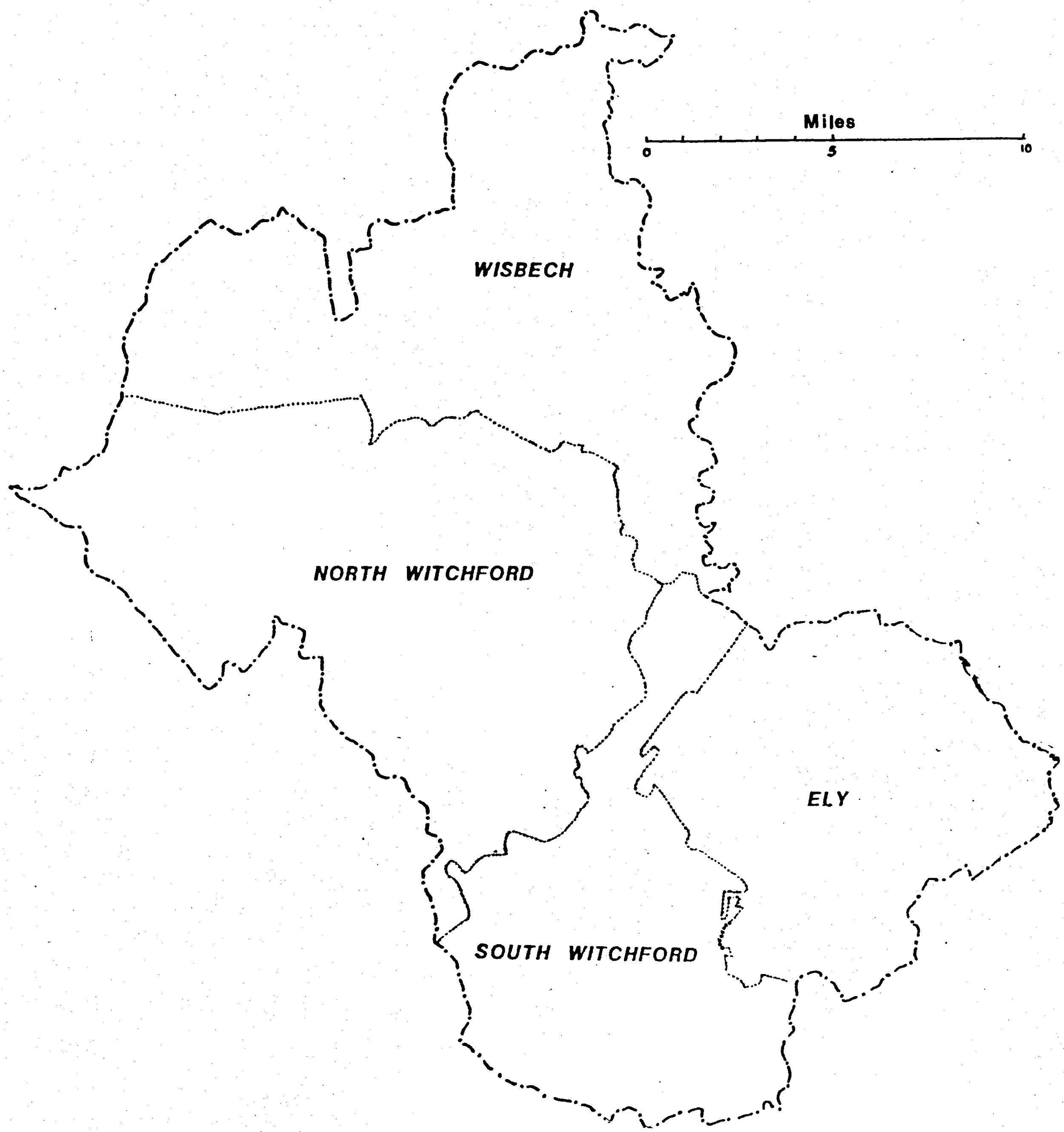
Appendix 1.1

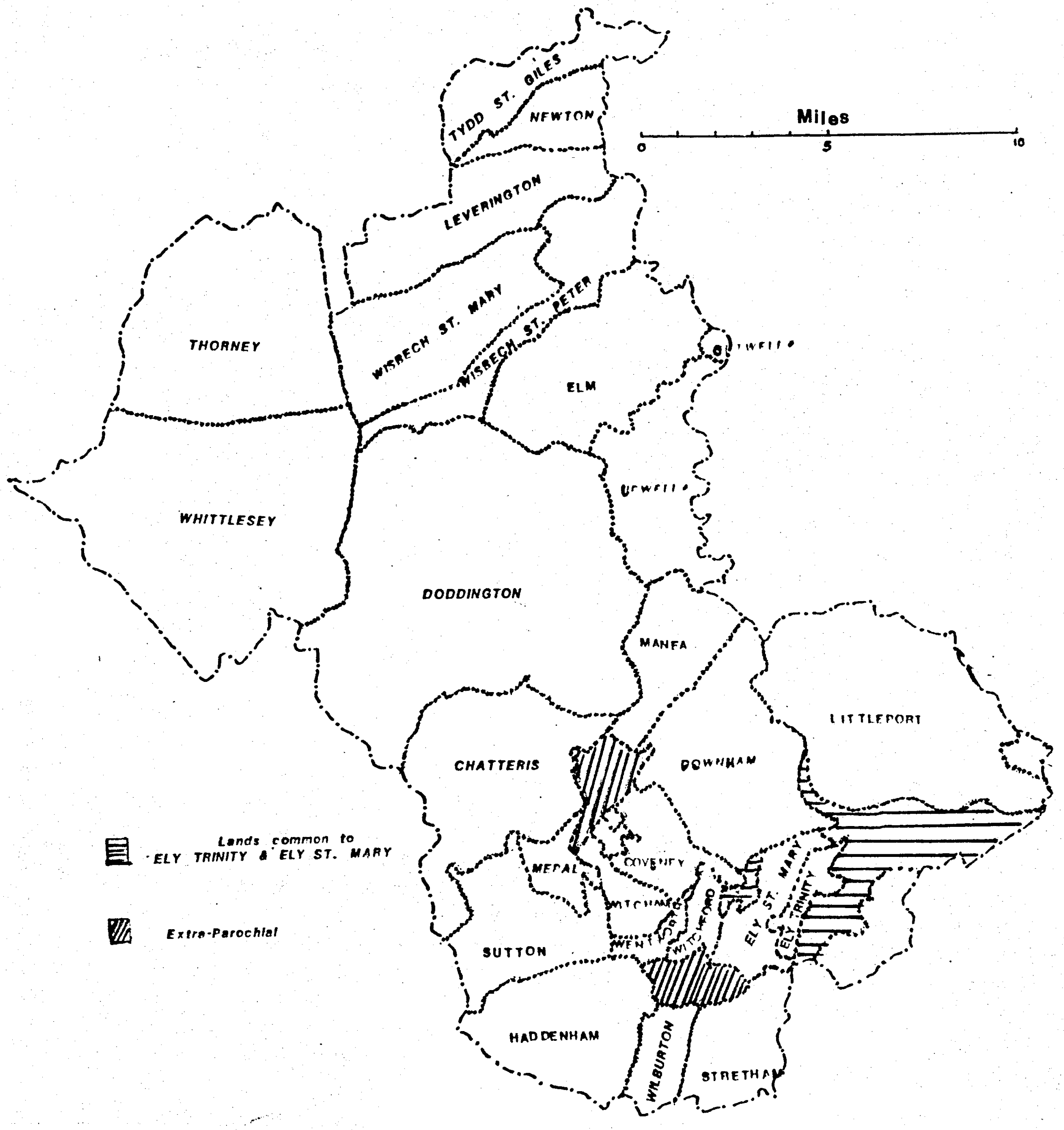
Hundred boundaries of the Isle of Ely



Source: Farrar (1979)

Appendix 1.2

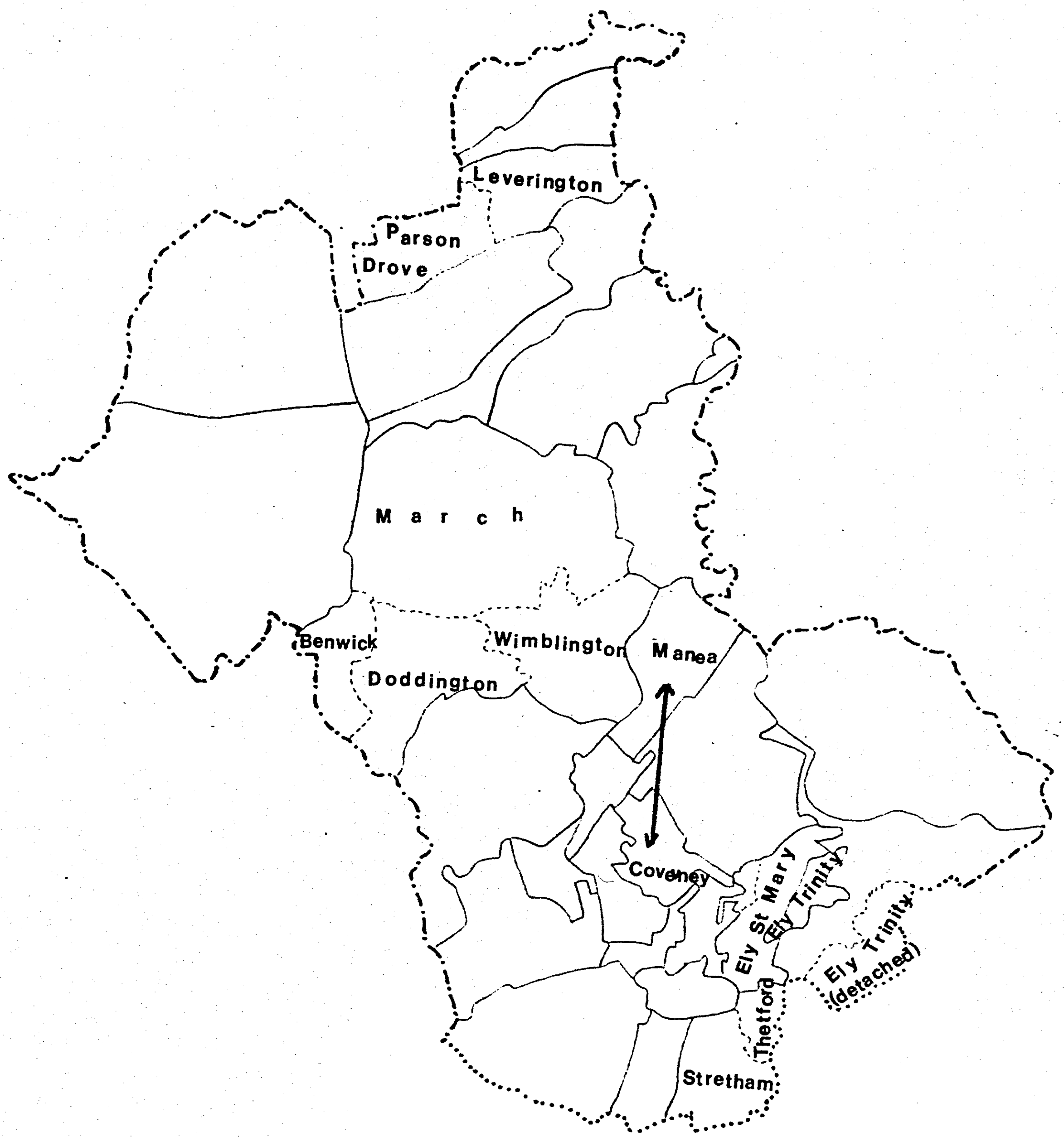
Parish boundaries of the Isle of Ely



Source: Farrar (1979)

Appendix 1.3

Map showing the hamlets and chapelries of the Isle parishes



Source: Farrar (1979)

Appendix 1.4

The start of the parochial registration system

Benwick	C 1851	B 1851	M 1851
Chatteris	C 1614	B 1614	M 1614
Coveney	C 1676	B 1677	M 1704
Doddington	C 1681	B 1681	M 1681
Downham	C 1558	B 1558	M 1558
Elm	C 1539	B 1539	M 1539
Ely Cathedral	C 1693	B 1690	M 1691
Ely, Chettisham	C 1701	B 1701	M 1754
Ely Holy Trinity	C 1559	B 1559	M 1559
Ely St. Mary	C 1670	B 1670	M 1670
Ely, Stutney	C 1545	B 1545	M 1545
Fridaybridge	C 1860	B 1860	M 1860
Haddenham	C 1570	B 1570	M 1570
Leverington	C 1558	B 1558	M 1558
Littleport	C 1753	B 1756	M 1754
Manea	C 1708	B 1708	M 1708
March	C 1548	B 1548	M 1548
Mepal	C 1659	B 1659	M 1659
Newton-in-the-Isle	C 1653	B 1653	M 1653
Outwell	C 1559	B 1559	M 1559
Parson Drove	C 1659	B 1659	M 1659
Stretham	C 1558	B 1558	M 1558
Sutton	C 1558	B 1558	M 1558
Thorney	C 1653	B 1653	M 1653
Tydd St. Giles	C 1687	B 1687	M 1687
Upwell	C 1653	B 1653	M 1653
Welney	C 1642	B 1653	M 1654
Wentworth	C 1684	B 1686	M 1685
Whittlesey St Andrew	C 1653	B 1653	M 1659
Whittlesey St Mary	C 1683	B 1683	M 1654
Wicken	C 1564	B 1564	M 1564
Wilburton	C 1736	B 1736	M 1737
Wimblington	C 1874	B 1874	M 1874
Wisbech St Mary	C 1557	B 1557	M 1557
Wisbech St Peter	C 1558	B 1558	M 1558
Witchford	C 1778	B 1778	M 1778

Source: Farrar (1979)

Appendix 2.1

Methods of Analysis

The main procedures used in this research were nominative techniques and aggregative analyses. The basic principles behind these are being discussed seperately from the main text as the flow of the argument would be disrupted if several pages were set aside to explain these techniques. Standard statistical tests, such as correlations, are not discussed here, but are simply referred to in the text. All the results are to be found in the relevant chapters.

Aggregative techniques

Aggregative analyses are investigations into the number of vital events occurring within a specific spatial unit, such as a chapelry or parish, over a given period of time. They have been used extensively over the past three decades in the study of short term variations, and seasonality trends within the vital registration events.[1] However, for other calculations, and especially for the study of secular trends, aggregative data is of limited value when used on its own, since it can only provide a superficial picture of the prevailing demographic regime.[2] Consequently, attempts to overcome the limitations of simple aggregative data[3] have resulted in the development of inverse projection[4], back projection[5] and spectral analysis,[6] which provide for aggregative studies the type of solution to the problems of demographic measurement that has already been provided for nominative studies by family reconstitution.

Inverse projection is a method of estimating age structure and vital rates from series of baptisms and burials. By taking a starting population of a known age structure and a series of death totals obtained from mortality schedules associated with an appropiate model life table, a comparison can be made with observed death totals. Each age group is then reduced by the number of deaths that were actually registered, while births from the vital registration events are put into the base of the age pyramid to produce a known age structure at time t+1. By making assumptions about the age patterns of fertility, births can be allocated to the female population and data on age structure, life expectancy, and so on, can be obtained at regular intervals of time.

This technique, however, has two limitations which are difficult to overcome when applied to English parochial registration data. Firstly, it assumes population closure and secondly it runs forward in time. This causes problems since widespread physical mobility characterised early modern England, while the first national demographic data that provided a known age structure was the 1841 census. Consequently, using the technique of inverse projection on English early modern vital registration data would entail endowing the starting population date with a fictitious age structure, as well as disregarding migration.

As a result of this the technique of back projection was developed by the Cambridge Group. Back projection, like inverse projection provides estimates of the size and structure of the population as well as summary measures of fertility and mortality. However, this technique, moves backwards in time from a starting population of a known age structure, as well as allowing for estimates of net migration. Consequently, it is ideally suited to the English parochial registration system.

The other development using aggregative analysis statistics is spectral analysis. In any plots against time, the yearly totals of burials, baptisms, and marriages reveal considerable variations. It is natural to assume that these variations reflect variations in the underlying vital rates and to search for soial, economic and meterological explanations. However, some of these variations can be accounted for by regular cycles. The spectral analysis is used to extract the components of change which can be accounted for by regular cycles. Hence this particular method is used when the main concern is to look at the course of population change. The spacing of peaks in series of events suggest that a proportion of fluctuations can be explained by regular cyclical peaks and troughs in the series, such as the recurrence of certain epidemic diseases.

Numerous assessments and critiques of the technique of aggregative analysis have been published,[7] hence only a discussion of the aggregative analyses for the research area will be undertaken.

Aggregatives for the Isle of Ely parishes

Aggregative analyses of the vital registration events for seven communities were completed in order to examine the demographic expansion in early modern Isle of Ely, as well as to provide a background against which to discuss the demographic and socio-economic changes of March between 1550-1750.

The aggregatives were completed from the original registers kept in the Cambridgeshire County Record Office for Doddington cum Benwick and Wimblington, March, and Ely St Mary, from a microfilm of the original parish register for Wisbech St Peters, and Wisbech St Mary, and from transcripts of the original registers for Haddenham, and Ely Holy Trinity.

Of these seven communities, aggregatives for both Haddenham[8] and Ely Holy Trinity[9] had already been completed for the years 1570-1812, and 1559-1685 respectively. However, when checking each of these aggregatives for two random twenty year periods, errors in the region of 6.3%-12.4% were in evidence due to incorrect counting and were therefore reworked for this study.[10]

Monthly totals of baptisms, burials, and marriages were collated on the forms supplied by the Cambridge Group for the History of Population and Social Structure for each of these communities. The sequence of operations in aggregative analysis has been outlined by Wrigley and the procedures he suggested are set out below.

a) Extract original data from the parish registers and bishops transcripts

b) Count monthly totals

c) Transfer to form

d) Calculate yearly totals

e) Input total for each spatial for each series for each year.

f) Create moving averages[11]

Although it is usual for aggregative analyses of baptisms and burials to deal with the total monthly events only, in the case of March, Haddenham, and Ely St Mary, a slightly different approach was used. For each of these three communities, the baptisms were collated sperately for male, female, and total baptisms, while the burial registers were analysed seperately for adult male, adult female, all children and total burials. This method of aggregating the registers was time consuming. However analysing the registers in this way meant that any discrepancy between the total events for any year, and the sum of its distinct categories was easily noticeable and could then be rechecked.

This method of aggregating was undertaken in order to observe sex ratios at baptism and sex selective adult mortality. However it may need to be stressed here that the figures for child mortality are possibly underestimated, since only those entries which referred to 'son of', 'daughter of', 'infant of', or 'child of', were considered to be children. The fact that not all child deaths may have been identified affects the adult mortality figures. Consequently, the child mortality figures need to be viewed as the minimum, while those for adult burials need to be viewed as a maximum of those recorded in the parochial registration system. This in turn may affect any discussion on the possible causes of death in the ensuing chapters.

The annual totals for each series for each year were then used to create nine year moving averages in order to facilitate the intrepretation of the results.

Although aggregative analyses can now provide estimates of the size and structure of the population as well as summary measures of fertility and mortality, they are unable to provide answers to all the questions posed on population dynamics. Furthermore, there are limitations evident in back projections for small, non-closed communities such as March which experienced considerable inmigration.[12] This consequently led to the time consuming process of a family reconstitution being performed on the vital registration events for March as the primary method of population analysis as it allows age-specific rates to be calculated without a known total population and age structure.

References

1. See for example Eversley (1966) p44-95; Wrigley and Schofield (1981) and Kussmaul (forthcoming).

2. Lee (1977) p337

3. The move back to a greater utilisation of aggregative data has been presented by Lee (1974) pp495-512; Livi-Bacci (1977) pp311-36 and Oeppen (1981).

4. See for example Allart (1969) p41; Wrigley and Schofield (1981); Krause (1965); Eversley (1966) and Drake (1974)

5. Oeppen (1981)

6. Granger & Hatanka (1964) pp171-90

7. See for example Krause (1965) and Wrigley and Schofield (1981).

8. Haddenham was completed by Dr Jack Ravensdale

9. Ely Holy Trinity was completed by Mrs J Russell

10. The errors in Haddenham were mainly due to incorrect addition especially in the case where the person collating the entries use a mixture of Roman and Arabic numerals, with the end result that the Roman II (two) was taken for the Arabic 11 (eleven) when adding up the entries.

11. Wrigley (1966)

12. Personal communication from Jim Oeppen.

Appendix 2.2

Family reconstitution form 623

MARRIAGE | **LITERACY**

	no.	place	date	date of end	date of next	husband	wife
M	623	March	31/5/1632	29/12/1652	—	L	

HUSBAND

	surname	name(s)	date of baptism (birth)	date of burial (death)	order of marr.	earlier FRF no.	later FRF no.	residence at baptism
H	SHEPPHERD	REYNOLD	18-9-1608	18-6-1654	1	—	—	

residence (occupation) at marriage | residence (occupation) at burial | date | residence (occupation) | date | residence (occupation)

Husband's father	surname	name(s)	residence (occupation)	FRF no.	Husband's mother	surname	name(s)
HF	SHEPPHERD	REINOLD		1397	HM	WALSHAM	MARGARET

WIFE

	surname	name(s)	date of baptism (birth)	date of burial (death)	order of marr.	earlier FRF no.	later FRF no.	residence at baptism
W	SHEPHERD	MARY	18-4-1613	29-12-1652				

residence (occupation) at marriage | residence (occupation) at burial | date | residence (occupation) | date | residence (occupation)

Wife's father	surname	name(s)	residence (occupation)	FRF no.	Wife's mother	surname	name(s)
WF	SHEPHERD	THOMAS		13132	WM		AGNES

CHILDREN

		sex	date of baptism (birth)	date of burial (death)	status	name(s)	date of marriage	FRF no. of first marr.	surname of spouse	age at bur.	age at marr.	birth inter-val	age of mothe
1	C	M	27-12-1632			William							
2	C	M	22-2-1635	23-5-1635	S	Stephen							
3	C	F	31-7-1636	12-7-1642	S	Elizabeth							
4	C	M	9-12-1638	1-7-1648	S	Reynold							
5	C	F	4-4-1641	26-8-1641	S	Mary							
6	C	M	6-3-1642	27-5-1642	S	John							
7	C	F	20-8-1643	30-8-1643	S	Margaret							
8	C	M	20-8-1643	30-8-1643	S	Thomas							
9	C	F	2-11-1645			Anne							
10	C	F	22-3-1647			Mary							
11	C	F	22-3-1647	8-1-1648	S	Alice							
12	C												
13	C												
14	C												
15	C												
16	C												

COMMENTS

Twins C7 + C8 ; C10 + C11

	Husband	Wife	Age group	Years marr.	No. of births
Age at marriage			15-19		
Age at end of marriage			20-24		
Age at burial			25-29		
Length of widowhood (mths)			30-34		
Length of marriage (years)			35-39		
	total	sons / daughters	40-44		
Number of births			45-49		

FRF iv 67

Source: Farrar (1979)

Appendix 2.3

PRO RG/1275 No 36, 1778-1837

Independent Church 1778 Clergyman: Thomas Porter

As Thomas Porter stated:

"Remarks that may be requisite or at least of Service should this Register be called for upon any Occassion after my Decease viz:-

1. There are some Persons whose Children I have Baptised so very Ignorant and uninterested as to be unable to give me their Names in writing or by spelling them out to me; And sometimes so faulty in their Pronunciation that I am unable to say positively, that the Names are exactly and Literally Right: but these are very few, and I have taken the utmost care to be as exact as possible.

2. The same Difficulty has attended me in Setting down the Names of the Places of residence of Persons whom it has been thought requisite to insert viz. The Residence of the Wives Father,- these Places being pronounced very different from the Mannor in which they are written.

3. As to the Time of the persons Birth; I have been obliged to depend intirely upon the Parents, or some Persons who were present at that Event.

All I am answerable for is the TIME WHEN THEY WERE BAPTISED!"

Appendix 3.1

Data Sources

There was no single comprehensive source of information on the demographic and socio-economic structure of early modern March. Thus a variety of data sources were linked together in order to provide a coherent body of information at the parish level. The source material from which the data was extracted was mainly of a fiscal or ecclesiastical nature, and included hearth tax assessments, wills, lay subsidies and statutes of the realm.

The majority of these sources have already accumulated an extensive literature. Therefore, only an assessment of the coverage, potential use, and possible bias of the relevant major sources as they relate to the Isle of Ely in general or March in particular is necessary. These are being discussed separately from the main text as the flow of argument would be disrupted if several pages were set aside to assess their usefulnes and limitations.

Hearth tax returns

This levy was first imposed in 1662 as part of the reorganisation of crown revenues after the restoration of Charles II. It was an attempt by Parliament to place the Governments administration on a satisfactory basis. The tax was, however, exceedingly unpopular, and according to the Act which eventually abolished it in 1689, it was 'not only a great oppression to the Poorer sort but a Badge of Slavery upon the whole People exposeings every Man's House to be Entered into and searched at pleasure by Persons unknown to him'.[1]

Occupied hearths were taxed at the rate of two shillings per annum, payable in two equal instalments on Lady Day and Michaelmas, with the first instalment due at Michaelmas 1662. However, the tax was not completely universal, with particular categories of people being exempt from payment. According to the Act of 1662, these were persons inhabiting a house worth less than twenty shillings per annum, those not having any other property exceeding that value, or those not having an annual income of more than ten pounds. They could be certified as unable to pay by the Minister, Churchwardens, or Overseers of the Poor. Those who paid neither church nor poor rate were also exempt from the tax. After the revising act of 1664, the exempt were defined as people with two or less hearths who fulfilled the above conditions.

It has often been suggested from this that there were two classes of exempt person those certified as exempt who were named in the tax schedule, and the paupers, who were automatically exempt and rarely named in the schedule. However, Arkell suggests that this is an erroneous suggestion although it may 'describe accurately how some returns were made in some counties, particularly in the 1670's.[2]

At the beginning of the levy, the tax was paid by the occupier of the property which had the effect of exempting the hearths occupied by the poor, even when they were rented. Under the revising act of 1664, landlords became liable for the tax on the hearths leased out to those who were exempt.

The tax was also managed under different administrations throughout its twenty seven year period. Lists of taxpayers were compiled under local administrations from Michaelmas 1662 to Lady Day 1666, and again from Michaelmas 1669 to Lady Day 1674. The local administrations had their accounts audited by the exchequer's editor, in whose circuit their area lay. These records were preserved centrally in the Kings Remembrances Office, and consequently are those most likely to survive for examnination today. However, from Michaelmas 1666 to Lady Day 1669, and again from Michaelmas 1674 to its abolition the right of the collection and therefore its administrative burden was sold into private hands. Due to this different administrative procedure records were kept outside the care of the national government and rarely survive.

Surviving material for the Isle of Ely

The surviving hearth tax material for the Isle of Ely comes from the periods 1662-66 and 1669-74, when local government was involved in its collection and detailed accounts were sent to the exchequer for auditing.

The Isle of Ely was enumerated separately from the rest of the county, with all the surviving original documentation being checked. The assessments were made by parish, with the exception of March, which was enumerated separately from that for Doddington. This was particularly useful because the data matched the spatial units used in all other sources, with the exception of the 1563 ecclesiastical return.

The hearth tax assesment for Michaelmas 1662[3] contains the names of those liable to pay tax. Its revision made at Michaelmas 1664[4] lists both taxpayers and those exempt. Comments made by the collector of this return in the margin state whether the person exempted from payment was ‘poore and exempt’, or ‘certified as exempt’, and was the fullest of the surviving returns. This return states whether the property was empty, or had fallen down or been pulled down, and in the case of the latter two, whether it was being rebuilt. Any discrepancy between the actual number of hearths and the number returned was also given, as well as the two cases in March, of a house being ‘in the Fennes which I am unable to find’. Information regarding any change of ownership between the assessment and the return was also noted, while the return for Whittlesey gives the owner of the property if it was not the householder.

As the hearth tax was levied on hearths, not heads, property, wealth or movable goods, evasion could only be practised by reducing or concealing the number of hearths. There are numerous instances of hearths being pulled down in order to be rebuilt, as well as householders returning fewer hearths. Tax evasion is hardly a new phenomonon, but one wonders how one householder of Ely who returned four hearths, felt he could conceal the other fourteen, with the excuse that 'noe payment will be made fore those I do not use'.

Also by now, due to the latest revising Act, the owner had become liable to pay if he let a cottage to 'any such persons who by reason of their poverty may be exempted from payment of the said duty'. However, the landlord of three hearths in Ely Trinity, refused to pay the tax on these hearths as the cottages were 'occupied by otheres even though they be poore and exempt'.

Evidence of mobility, both within and outside the parish is also occasionally mentioned within this 1664 return. References to changed ownership abound, but whether this was due to the death of the previous owner is unknown. This would be difficult to check, as this vital event may not have been recorded in the parish under observation. If the house was empty, but had been occupied at the previous return, a note was made of the area to which the previous householder had moved whether it was within the same parish, or further afield.

The returns for Lady Day 1666,[5] Michaelmas 1670[6] and Lady Day 1674[7] also recorded the names of those exempted from payment. The return for Michaelmas 1670 also gives the district in March in which the househoulder resided. Unfortunately, this return has suffered greater damage due to the ravages of time than any other assessment. The list of householders in the town of March is extant except for the loss of the number of hearths for five entries Norwoodside entries suffered badly, with only fourteen of the 104 entries still present in their entirety. In High Dyke, of the fifty seven entries, all the names are visible, although some of the data regarding the number of hearths is incomplete while Towne End has thirty of its forty two entries extant. All of the thirty nine entries for the 'Fennes' are visible. The names of those exempted through possessing a legal certificate are present, but unfortunately are en bloc at the end of the return with no reference to their place of residence.

The abstract of the Exchequer returns for Michaelmas 1670, Lady Day 1671 and Michaelmas 1671[8] shows an increase in the number of empty houses, the change in the number of exempt, as well as the number of houses in the Isle burnt or damaged by flood, between these assessments. Unfortunately, neither of the 1671 hearth tax returns survive.

Conclusion

The hearth tax returns for the Isle of Ely, like many historical documents, pose more questions than they answer. The way in which the information extracted from the hearth tax assessments was utilised has been dealt with in the respective chapters. Basically, the hearth tax data was used in conjunction with the 1669 list of commoners and compared against the family reconstitution study in order to determine the possible lack of registration of vital events due to the level of dissent.

The lay subsidy returns

The early sixteenth century subsidy returns were levied on each individual's most important form of wealth.[9] They gave the nature of the individual's wealth, with the amount of tax assessed. The data for the Isle of Ely were presented in units as small as parishes, and occasionally at the level of the individual hamlet, or chapelry as in the case of March. They deal with all persons over the age of sixteen who were assessed on wages of at least one pound per annum or possesed goods to the value of at least two pounds and hence possibly included a number of people co-resident within the same household or houseful,[10] such as sons, apprentices and servants.

The three categories of wealth taxed were landed incomes, goods and wages and each class was clearly defined in the Act of 1523.[11]

The first class of wealth was defined as ‘Fee Symple Fee Taile tyme of lyfe of Yeres Execution by Worde by Copye of Court Roll or at Will, in any Castelles Honours manours londes tenements Rentes services hereditaments Annuyities fees corrodies or profittes’.[12] The second category was ill-defined but included coin, plate and debts owing to the taxpayer but excluded standing corn and personal attire. ‘And ... all coynes plate goodes and catelles being in the rule or custodie of any peon or psonnes to thuse of any other pson withyn age or full age, or to those of any corporation fratnyte guylde mysterie or any communaltie beyng incorporate or not incorporate’.[13] The third category included all wage earners over the age of sixteen who earned at least one pound per annum. The Act simply stated that anyone ‘having none other substaunce wherby the same person shuld or ought to be set according to this acte as is aforesaid at a higher or greeter some [should pay] four pence yerely during the said two yeres[14].

The rates of taxation were adjusted so that each man paid 1/40th in tax on goods and 1/20th on landed incomes. However, if a man fell into two or more categories he was taxed in the class that provided the State with the most tax. Men assessed at twenty pounds and more in goods paid the same rate as those on landed incomes, namely 1/20th.

It must have been clear to those who drew up the subsidy that there were three distinct categories of wealth being taxed. However, in practice most men in the Isle of Ely were assessed on their goods.(Table A3.1)

Table A3.1 1524/5 assessments on land, goods and wages.

Parish	No. Assessed	Land	Goods	Wages
Hundred of Wisbech				
Upwell	48	11	36	1
Elm	62	1	60	1
Newton	61	3	54	4
Outwell	49	1	48	0
Tydd St. Giles	78	2	75	1
Leverington	98	2	94	2
Wisbech	164	2	144	18
Hundred of Ely				
Downham	102	0	97	5
Ely	382			
Stutney	22	0	19	3
Littleport	93	0	84	9
Hundred of Witchford				
Witchford	43	0	29	14
Wentworth	14	0	10	4
Maney	16	0	16	0
March	88	0	88	0
Doddington	26	1	22	3
Wimblington	33	0	30	3
Whittlesey	298	0	255	43
Chatteris	149	0	124	25
Coveney	25	0	20	5
Stretham	77	0	68	9
Thetford	28	0	27	1
Wilburton	59	0	46	13
Haddenham	222			
Sutton	152	0	132	20
Mepal	16	0	12	4
Witcham	51	0	39	12

Source: E/179/

It is evident from Table A3.1 that the majority of the inhabitants of the Isle of Ely were assessed on the goods they held. While 85 percent of the taxpayers living in the Witchford hundred were assessed on their goods, this was surpassed by both the Wisbech and Ely hundreds where over 91 percent of all taxpayers were assessed on their goods. Few taxpayers were assessed on their land. However, the large discrepancy between the peat fen parishes, where only one individual was assessed, and the parishes lying on the silt fen, especially Upwell where almost a quarter of taxpayers were assessed on land, needs to be treated with caution. The 1524/5 subsidy was a lay subsidy, and consequently all clerical wealth was ignored and until the vacancy of the See in the late sixteenth century, the majority of land lay in the hands of the ecclesiastical authorities.

While those in the third category should have paid 4d, (8d if they were aliens) for each pound earned this was not the case in the Isle of Ely where a tax of 4d was levied on a wage as low as seven shillings. (Table A3.2)

Table A3.2 Wage earners in the Witchford and Ely hundreds.

Assessed Wage	Number	Amount paid in tax
26/8	1	4d
20/-	91	30/8d
18/-	1	4d
17/-	1	4d
16/8	5	1/8d
16/4	1	4d
16/-	21	7/-
15/-	3	1/-
14/-	1	4d
13/4	18	6/-
13/-	1	4d
12/-	1	4d
10/-	16	5/4d
7/-	1	4d

Source: PRO E/179/

Note: These figures exclude Ely and Haddenham.

From Table A3.2 it would appear that the Isle of Ely assessors either misunderstood the Statutes or applied them incorrectly as almost 47 percent of the wage earners were assessed on wages of less than the statutory one pound.

Conclusion

The subsidy lists can be used as a surrogate measure to map the population distribution in the early sixteenth century. However, we must be under no illusion about the weaknesses of this source. Evasion and conventional valuation must have been common. The only consolation when using fiscal sources is that there is no evidence to suggest that men were more dishonest in one area than another.

<u>References</u>

1. See Alldridge (1984).

2. See Arkell's paper in Alldridge (1984) p20

3. PRO E/179/84/436

4. PRO E/179/84/437

5. PRO E/179/244/22

6. PRO E/179/375/27

7. PRO E/179/244/23

8. PRO E/179/375/28

9. For full details of the Tudor lay Subsidies see Schofield, thesis (1963), who outlined the nature of the 1523 Act and traced the evolution of the subsidy structure. Also see Sheail, thesis (1968) & Sheail (1980) who has shown that these subsidies gave a standard measurement of the distribution of wealth and population within the country.

10. For a definition of these terms see Laslett (1969)

11. PRO SP Statutes of the realm, 14 & 15 Henry viii, c16

12. Sheail (1972)

13. Quoted in Sheail, thesis (1968) p20

14. Quoted in Sheail, thesis (1968) p21

Appendix 3.2

Ely Holy Trinity Baptismal Data

Year	Raw Data	Moving Average	Standard Error
1559	17	36.96	-53.99
1560	53	38.94	36.11
1561	45	40.92	9.96
1562	48	42.91	11.87
1563	46	44.89	2.47
1564	49	47.56	3.03
1565	51	47.22	8.00
1566	47	46.78	0.47
1567	48	47.11	1.88
1568	41	46.89	-12.55
1569	50	45.78	9.22
1570	41	43.22	-5.14
1571	51	42.89	18.91
1572	44	44.78	-1.73
1573	39	45.44	-14.18
1574	28	45.33	-38.23
1575	44	45.78	-3.88
1576	65	45.44	43.03
1577	47	45.44	3.42
1578	49	48.44	1.15
1579	45	52.67	-14.56
1580	48	53.78	-10.74
1581	44	53.57	-17.84
1582	66	54.99	20.00
1583	66	55.44	19.04
1584	54	59.44	-9.16
1585	63	62.78	0.35
1586	60	64.89	-7.53
1587	53	64.44	-17.76
1588	81	65.22	24.19
1589	78	66.22	17.79
1590	63	67.11	-6.13

1591	62	66.89	-7.31
1592	73	68.11	7.18
1593	63	64.33	-2.07
1594	71	62.22	14.11
1595	58	62.44	-7.12
1596	64	62.44	2.49
1597	47	59.99	-21.67
1598	59	60.44	-2.39
1599	65	62.33	4.28
1600	62	64.44	-3.79
1601	51	64.99	-21.54
1602	67	68.44	-2.11
1603	88	68.22	28.99
1604	77	68.22	12.87
1605	69	68.99	0.88
1606	78	70.56	10.55
1607	57	69.89	-18.44
1608	65	66.99	-2.98
1609	69	66.22	4.19
1610	65	66.11	-1.68
1611	61	65.99	-7.57
1612	62	65.67	-5.58
1613	70	66.67	5.00
1614	68	68.33	-0.48
1615	77	69.67	10.52
1616	54	72.11	-25.11
1617	74	75.89	-2.48
1618	84	77.22	8.77
1619	77	76.56	0.58
1620	83	75.56	9.85
1621	96	77.44	23.95
1622	82	75.78	8.21
1623	62	73.56	-15.70
1624	68	75.11	-9.46
1625	71	74.89	-5.19
1626	59	71.33	-17.28
1627	64	67.67	-5.41
1628	91	70.22	29.58
1629	81	71.22	13.72

1625	71	74.89	-5.19
1626	59	71.33	-17.28
1627	64	67.67	-5.41
1628	91	70.22	29.58
1629	81	71.22	13.72
1630	64	71.11	-9.99
1631	49	73.44	-33.28
1632	85	74.56	14.00
1633	77	72.67	5.96
1634	70	71.78	-2.47
1635	80	72.56	10.26
1636	74	78.44	-5.66
1637	74	77.33	-4.31
1638	73	78.11	-6.54
1639	71	80.99	-12.34
1640	102	80.44	26.79
1641	75	78.99	-5.06
1642	84	80.33	4.56
1643	96	79.56	20.67
1644	75	79.44	-5.59
1645	61	77.33	-21.12
1646	86	76.44	12.50
1647	66	74.78	-11.73
1648	70	74.44	-5.97
1649	83	76.78	8.10
1650	67	82.22	-18.51
1651	69	83.22	-17.08
1652	93	88.11	5.54
1653	96	91.56	4.85
1654	110	89.99	22.22
1655	95	92.44	2.76
1656	110	98.44	11.73
1657	101	100.11	0.88
1658	69	97.78	-29.43
1659	89	97.22	-8.45
1660	123	101.11	21.64
1661	108	100.56	7.40
1662	75	101.56	-26.14
1663	105	106.22	-1.15

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1664	130	105.78	22.89
1665	105	103.99	0.96
1666	110	101.78	8.07
1667	111	104.89	5.82
1668	85	104.89	-18.96
1669	107	102.78	4.10
1670	88	102.89	-14.47
1671	103	101.22	1.75
1672	105	102.33	2.60
1673	111	106.78	3.95
1674	106	104.89	1.05
1675	95	105.44	-9.90
1676	121	105.11	15.11
1677	125	103.67	20.57
1678	90	100.99	-10.89
1679	93	99.22	-6.27
1680	100	100.99	-0.99
1681	92	97.56	-5.69
1682	87	94.99	-8.42
1683	90	97.89	-8.05
1684	111	99.11	11.99
1685	90	99.89	-9.89
1686	102	100.44	1.54
1687	116	99.56	16.51
1688	104	97.56	6.60
1689	107	93.44	14.50
1690	97	91.89	5.56
1691	79	91.11	-13.29
1692	72	87.11	-17.34
1693	74	83.99	-11.90
1694	76	80.99	-6.17
1695	95	76.89	23.55
1696	80	75.78	5.57
1697	76	76.44	-0.58
1698	80	76.11	5.10
1699	60	76.89	-21.96
1700	69	74.78	-7.72
1701	78	73.67	5.88
1702	71	75.44	-5.89

1703	83	74.67	11.16
1704	76	76.99	-1.29
1705	70	79.33	-11.76
1706	92	78.11	17.78
1707	73	78.33	-6.80
1708	81	77.99	3.84
1709	90	78.99	13.92
1710	67	81.44	-17.73
1711	73	80.78	-9.62
1712	80	81.99	-2.43
1713	85	84.33	0.79
1714	92	86.33	6.56
1715	86	90.22	-4.67
1716	84	91.67	-8.36
1717	102	93.89	8.63
1718	108	94.67	14.08
1719	102	96.99	5.15
1720	86	97.33	-11.64
1721	100	97.78	2.27
1722	92	94.89	-3.04
1723	113	91.22	23.87
1724	89	86.56	2.82
1725	88	82.99	6.02
1726	76	79.56	-4.46
1727	75	78.78	-4.79
1728	60	73.67	-18.55
1729	54	72.33	-25.34
1730	69	71.22	-3.12
1731	85	71.11	19.53
1732	67	70.89	-5.48
1733	77	72.67	5.96
1734	78	74.89	4.15
1735	75	77.33	-3.01
1736	73	76.11	-4.08
1737	76	76.67	-0.86
1738	74	76.67	-3.47
1739	91	76.44	19.04
1740	74	76.33	-3.05
1741	72	76.99	-6.49

1742	77	76.56	0.95
1743	76	77.22	-1.58
1744	74	75.78	-2.34
1745	79	75.99	3.94
1746	72	75.56	-4.70
1747	80	75.67	5.72
1748	78	76.22	2.33
1749	76	76.33	-0.43
1750	68	76.99	-11.68
1751	78	79.78	-2.22
1752	81	79.44	1.95
1753	75	78.78	-4.79
1754	85	78.99	7.59
1755	97	79.44	22.09
1756	77	79.44	-3.07
1757	72	78.44	-8.21
1758	78	77.44	0.71
1759	72	76.44	-5.81
1760	78	75.44	3.38

<u>Haddenham Baptismal Data</u>

Year	Raw Data	Moving Average	Standard Error
1570	38	43.78	-13.19
1571	39	41.61	-6.27
1572	35	39.44	-11.26
1573	47	37.28	26.08
1574	31	35.11	-11.70
1575	42	33.67	24.75
1576	48	33.56	43.04
1577	26	31.56	-17.60
1578	10	28.99	-65.51
1579	25	29.99	-16.66
1580	38	26.33	44.30
1581	17	21.11	-19.47
1582	24	22.67	5.88

1583	40	26.22	52.54
1584	9	28.44	-68.35
1585	1	29.33	-96.59
1586	40	32.11	24.56
1587	42	34.56	21.54
1588	45	34.33	31.06
1589	46	34.44	33.54
1590	42	39.33	6.77
1591	46	36.11	27.38
1592	38	32.67	16.32
1593	10	29.11	-65.64
1594	45	27.11	65.98
1595	11	25.67	-57.14
1596	11	23.89	-53.95
1597	13	23.33	-44.28
1598	28	26.89	4.13
1599	29	28.22	2.75
1600	30	34.22	-12.33
1601	33	39.56	-16.57
1602	42	44.78	-6.20
1603	57	48.56	17.39
1604	65	49.99	30.00
1605	59	54.44	8.36
1606	60	56.11	6.93
1607	62	57.11	8.56
1608	42	57.67	-27.16
1609	70	54.89	27.53
1610	48	55.78	-13.94
1611	51	53.22	-4.17
1612	62	50.56	22.63
1613	40	50.56	-20.87
1614	67	46.33	44.60
1615	37	45.78	-19.17
1616	38	45.44	-16.38
1617	42	44.56	-5.73
1618	32	45.22	-29.23
1619	43	43.44	-1.02
1620	48	45.99	4.34
1621	54	45.56	18.53

1622	46	45.33	1.47
1623	51	45.56	11.95
1624	60	46.56	28.87
1625	34	46.56	-26.96
1626	40	44.67	-10.44
1627	34	42.22	-19.47
1628	52	41.22	26.14
1629	48	39.78	20.67
1630	37	40.78	-9.26
1631	24	41.11	-41.62
1632	42	43.99	-4.54
1633	47	43.56	7.90
1634	43	43.22	-0.51
1635	43	44.33	-3.00
1636	60	48.11	24.71
1637	48	45.11	6.40
1638	45	42.89	4.92
1639	47	44.11	6.54
1640	58	45.67	27.00
1641	15	46.22	-67.54
1642	27	47.89	-43.61
1643	54	49.99	8.00
1644	57	49.11	16.06
1645	65	47.78	36.04
1646	63	50.67	24.34
1647	64	48.99	30.61
1648	39	42.99	-9.30
1649	46	38.11	20.69
1650	41	35.67	14.95
1651	12	33.67	-64.35
1652	0	32.44	-99.99
1653	13	32.44	-59.93
1654	43	30.78	39.71
1655	45	30.89	45.68
1656	53	34.56	53.37
1657	39	39.99	-2.49
1658	31	43.78	-29.18
1659	42	41.56	1.06
1660	45	38.67	16.37

1661	49	37.89	29.32
1662	47	38.78	21.20
1663	23	41.11	-44.05
1664	19	38.99	-51.28
1665	46	33.99	35.29
1666	47	32.99	42.42
1667	52	31.89	63.06
1668	23	35.99	-36.11
1669	0	39.67	-99.99
1670	40	39.22	1.98
1671	37	38.56	-4.03
1672	60	38.44	56.06
1673	52	41.33	25.80
1674	42	45.99	-8.69
1675	41	44.11	-7.05
1676	51	43.78	16.49
1677	49	40.11	22.16
1678	42	39.22	7.08
1679	23	38.11	-39.65
1680	34	34.67	-1.92
1681	27	33.56	-19.53
1682	44	33.44	31.56
1683	32	33.78	-5.26
1684	10	36.11	-72.30
1685	41	36.78	11.48
1686	48	37.56	27.81
1687	45	36.56	23.10
1688	44	37.44	17.50
1689	40	39.56	1.12
1690	34	37.67	-9.73
1691	35	36.67	-4.54
1692	40	37.22	7.46
1693	29	35.33	-17.92
1694	24	35.89	-33.12
1695	39	35.44	10.03
1696	50	35.99	38.88
1697	27	35.22	-23.34
1698	45	35.78	25.77
1699	30	36.22	-17.17

1700	40	36.67	9.09
1701	33	34.44	-4.19
1702	34	34.78	-2.23
1703	28	32.89	-14.86
1704	43	32.99	30.30
1705	30	30.99	-3.22
1706	30	31.89	-5.92
1707	28	30.67	-8.69
1708	31	31.56	-1.76
1709	22	31.22	-29.53
1710	41	31.67	29.47
1711	23	34.99	-34.28
1712	36	37.56	-4.14
1713	40	38.67	3.44
1714	34	41.56	-18.18
1715	60	42.44	41.36
1716	51	43.67	16.79
1717	41	44.44	-7.74
1718	48	44.89	6.93
1719	49	45.99	6.52
1720	34	44.67	-23.88
1721	43	42.33	1.57
1722	44	43.78	0.88
1723	44	43.33	1.53
1724	48	41.89	14.58
1725	30	41.22	-27.22
1726	54	41.44	30.29
1727	44	40.33	9.09
1728	36	40.22	-10.49
1729	28	38.99	-28.20
1730	45	39.33	14.40
1731	34	38.22	-11.04
1732	43	37.56	14.49
1733	37	36.11	2.46
1734	33	36.67	-9.99
1735	44	34.33	28.15
1736	38	34.78	9.26
1737	23	32.33	-28.86
1738	33	31.22	5.69

1739	24	32.56	-26.27
1740	38	30.78	23.46
1741	21	31.99	-34.37
1742	27	33.56	-19.53
1743	45	32.67	37.75
1744	28	33.11	-15.43
1745	49	32.44	51.02
1746	37	34.11	8.46
1747	25	35.67	-29.90
1748	28	33.78	-17.10
1749	32	35.89	-10.83
1750	36	34.89	3.18
1751	41	36.11	13.53
1752	28	36.99	-24.32
1753	47	38.22	22.96
1754	40	37.78	5.88
1755	48	37.67	27.43
1756	33	36.44	-9.45
1757	39	35.43	10.08
1758	28	34.41	-18.63
1759	35	33.39	4.80
1760	30	32.38	-7.34

March Baptismal Data

Year	Raw Data	Moving Average	Standard Error
1558	15	22.04	-31.95
1559	40	24.06	66.24
1560	12	26.08	-53.98
1561	22	28.09	-21.69
1562	34	30.11	12.91
1563	35	31.44	11.30
1564	54	30.44	77.37
1565	32	32.56	-1.70
1566	27	35.89	-24.76
1567	27	35.44	-23.82

1568	31	34.56	-10.28
1569	31	33.11	-6.37
1570	52	32.44	60.27
1571	30	33.33	-9.99
1572	27	34.44	-21.61
1573	41	35.44	15.67
1574	26	36.22	-28.22
1575	35	31.11	12.50
1576	37	30.44	21.53
1577	40	31.22	28.11
1578	38	30.56	24.36
1579	6	33.33	-81.99
1580	24	33.78	-28.94
1581	34	30.78	10.46
1582	35	32.22	8.62
1583	51	32.56	56.65
1584	39	36.56	6.68
1585	10	38.56	-74.06
1586	53	38.99	35.89
1587	41	36.78	11.48
1588	42	34.78	20.76
1589	42	34.11	23.12
1590	38	35.67	6.54
1591	15	32.99	-54.54
1592	33	31.44	4.94
1593	33	29.78	10.82
1594	24	28.78	-16.60
1595	29	27.99	3.57
1596	27	28.99	-6.89
1597	27	28.11	-3.95
1598	33	28.67	15.11
1599	31	30.44	1.82
1600	24	30.56	-21.45
1601	25	30.67	-18.47
1602	38	31.78	19.58
1603	40	32.78	22.03
1604	30	34.22	-12.33
1605	28	34.99	-19.99
1606	37	37.44	-1.18

1607	42	37.67	11.50
1608	44	36.89	19.27
1609	31	37.44	-17.21
1610	47	39.22	19.83
1611	40	38.44	4.04
1612	33	37.78	-12.64
1613	35	36.44	-3.96
1614	44	37.44	17.50
1615	30	36.22	-17.17
1616	36	36.99	-2.70
1617	32	37.11	-13.77
1618	40	38.78	3.15
1619	36	37.56	-4.14
1620	47	37.44	25.51
1621	34	36.78	-7.55
1622	50	37.22	34.32
1623	33	35.78	-7.76
1624	29	35.56	-18.43
1625	30	34.56	-13.18
1626	36	34.78	3.51
1627	27	32.44	-16.78
1628	34	32.33	5.15
1629	38	33.11	14.76
1630	36	33.56	7.28
1631	29	33.44	-13.28
1632	32	34.78	-7.98
1633	36	34.89	3.18
1634	34	34.44	-1.29
1635	35	33.44	4.65
1636	39	35.22	10.72
1637	35	36.78	-4.83
1638	34	37.99	-10.52
1639	27	39.56	-31.74
1640	45	40.99	9.75
1641	46	42.33	8.66
1642	47	44.99	4.44
1643	48	46.78	2.61
1644	48	47.56	0.93
1645	51	48.78	4.55

1646	59	47.67	23.77
1647	50	46.78	6.88
1648	34	42.99	-20.93
1649	56	40.99	36.58
1650	36	38.44	-6.35
1651	39	36.67	6.36
1652	14	38.11	-63.26
1653	30	36.89	-18.67
1654	28	31.78	-11.88
1655	43	28.89	48.84
1656	63	26.67	136.25
1657	23	26.33	-12.65
1658	10	26.78	-62.65
1659	10	28.56	-64.98
1660	19	27.44	-30.76
1661	11	24.89	-55.80
1662	34	29.78	14.17
1663	44	35.78	22.98
1664	33	40.67	-18.85
1665	40	44.44	-9.99
1666	67	48.67	37.67
1667	64	50.89	25.76
1668	54	52.33	3.18
1669	53	54.67	-3.04
1670	49	55.99	-12.49
1671	54	53.99	0.11E-03
1672	57	53.33	6.87
1673	54	51.99	3.84
1674	52	52.67	-1.26
1675	49	50.44	-2.86
1676	58	49.33	17.56
1677	42	49.44	-15.05
1678	59	49.67	18.79
1679	29	51.78	-43.99
1680	44	52.11	-15.56
1681	58	51.67	12.25
1682	56	53.33	5.00
1683	71	53.56	32.57
1684	52	54.78	-5.07

1685	54	54.44	-0.81
1686	57	51.99	9.61
1687	61	49.11	24.20
1688	40	42.89	-6.73
1689	41	41.99	-2.38
1690	36	38.11	-5.53
1691	30	37.22	-19.40
1692	15	37.99	-60.52
1693	44	39.99	10.00
1694	19	42.56	-55.35
1695	49	44.99	8.88
1696	68	47.56	42.99
1697	58	53.99	7.40
1698	64	52.67	21.51
1699	58	53.67	8.07
1700	53	51.22	3.47
1701	73	49.44	47.64
1702	32	48.78	-34.39
1703	28	47.33	-40.84
1704	27	46.78	-42.28
1705	52	46.33	12.23
1706	52	43.44	19.69
1707	51	44.78	13.89
1708	53	47.56	11.44
1709	49	51.67	-5.16
1710	47	52.99	-11.32
1711	44	52.67	-16.45
1712	53	52.11	1.70
1713	64	54.78	16.83
1714	64	56.78	12.72
1715	49	59.11	-17.10
1716	46	59.67	-22.90
1717	77	62.78	22.65
1718	67	63.89	4.86
1719	68	65.89	3.20
1720	49	68.67	-28.64
1721	81	70.33	15.16
1722	74	70.44	5.04
1723	82	68.67	19.41

1724	74	66.33	11.55
1725	61	65.44	-6.79
1726	78	62.78	24.24
1727	51	58.56	-12.90
1728	47	55.99	-16.07
1729	41	53.44	-23.28
1730	57	52.99	7.54
1731	36	51.89	-30.62
1732	59	51.78	13.94
1733	51	49.67	2.68
1734	57	49.99	14.00
1735	68	49.33	37.83
1736	50	50.99	-1.96
1737	28	47.56	-41.12
1738	44	47.99	-8.33
1739	51	48.11	6.00
1740	51	47.44	7.49
1741	28	46.99	-40.42
1742	55	49.33	11.48
1743	58	49.11	18.09
1744	62	47.78	29.76
1745	46	45.89	0.24
1746	49	48.56	0.93
1747	42	48.22	-12.90
1748	39	47.44	-17.79
1749	34	44.33	-23.30
1750	52	45.78	13.59
1751	52	45.33	14.70
1752	51	47.33	7.74
1753	34	49.99	-31.99
1754	59	51.99	13.46
1755	45	51.67	-12.90
1756	60	51.67	16.12
1757	63	52.55	19.88
1758	52	53.43	-2.68
1759	49	54.32	-9.78
1760	52	55.19	-5.79

Wisbech St Peter Baptismal Data

Year	Raw Data	Moving Average	Standard Error
1558	14	31.91	-56.12
1559	38	34.96	8.69
1560	39	38.01	2.60
1561	57	41.06	38.81
1562	50	44.11	13.35
1563	53	47.44	11.70
1564	50	48.78	2.50
1565	49	48.22	1.61
1566	47	47.56	-1.16
1567	44	46.56	-5.48
1568	50	46.22	8.17
1569	34	46.67	-27.14
1570	51	45.44	12.22
1571	41	44.78	-8.43
1572	50	45.33	10.29
1573	54	45.99	17.39
1574	38	48.99	-22.44
1575	41	50.22	-18.36
1576	49	51.67	-5.16
1577	56	53.44	4.78
1578	61	54.67	11.58
1579	62	56.67	9.41
1580	54	57.67	-6.35
1581	66	58.56	12.71
1582	65	59.56	9.14
1583	56	60.44	-7.35
1584	50	59.11	-15.41
1585	57	62.33	-8.55
1586	65	64.56	0.07
1587	69	62.89	9.71
1588	50	64.78	-22.81
1589	83	67.56	22.86
1590	86	68.22	26.05
1591	50	72.22	-30.76
1592	73	74.44	-1.94

1593	75	78.78	-4.79
1594	63	79.22	-20.47
1595	101	78.44	28.75
1596	89	83.78	6.23
1597	89	85.89	3.62
1598	87	86.67	0.38
1599	79	89.44	-11.67
1600	98	89.11	9.97
1601	92	87.99	4.54
1602	82	87.67	-6.46
1603	88	88.11	-0.12
1604	98	87.56	11.92
1605	79	86.78	-8.96
1606	86	84.99	1.17
1607	91	87.56	3.93
1608	74	86.89	-14.83
1609	91	83.78	8.62
1610	76	84.67	-10.23
1611	105	83.67	25.49
1612	82	80.67	1.65
1613	70	81.33	-13.93
1614	87	78.33	11.06
1615	77	79.11	-2.66
1616	64	76.78	-16.64
1617	80	76.33	4.80
1618	64	79.56	-19.55
1619	83	77.67	6.86
1620	84	77.99	7.69
1621	78	79.44	-1.81
1622	99	79.11	25.14
1623	70	79.44	-11.88
1624	80	81.78	-2.17
1625	77	82.22	-6.35
1626	77	82.44	-6.60
1627	67	79.56	-15.78
1628	104	84.33	23.32
1629	88	87.99	0.86E-04
1630	80	90.56	-11.65
1631	73	95.67	-23.69

1632	113	98.99	14.14
1633	113	100.44	12.50
1634	100	102.22	-2.17
1635	123	102.22	20.32
1636	97	104.78	-7.42
1637	117	104.78	11.66
1638	104	105.99	-1.88
1639	80	110.89	-27.85
1640	96	108.99	-11.92
1641	113	111.22	1.59
1642	124	109.44	13.29
1643	144	110.44	30.38
1644	106	112.11	-5.45
1645	117	113.89	2.73
1646	101	112.89	-10.53
1647	113	113.33	-0.29
1648	95	112.11	-15.26
1649	112	109.89	1.92
1650	104	109.99	-5.45
1651	128	114.11	12.17
1652	133	115.78	14.87
1653	86	115.44	-25.50
1654	118	111.11	6.20
1655	138	111.99	23.21
1656	128	111.78	14.51
1657	92	111.67	-17.61
1658	73	115.56	-36.82
1659	112	114.33	-2.04
1660	126	115.22	9.35
1661	132	114.99	14.78
1662	121	119.33	1.39
1663	107	124.11	-13.78
1664	146	124.22	17.53
1665	126	124.33	1.34
1666	131	121.44	7.86
1667	116	122.99	-5.69
1668	113	125.89	-10.23
1669	127	126.78	0.17
1670	106	126.67	-16.31

1671	135	126.67	6.57
1672	133	127.22	4.54
1673	154	129.22	19.17
1674	125	128.67	-2.84
1675	131	127.22	2.96
1676	121	123.44	-1.98
1677	131	119.44	9.67
1678	122	115.11	5.98
1679	93	113.44	-18.02
1680	101	111.44	-9.37
1681	97	109.22	-11.19
1682	115	107.67	6.81
1683	110	105.11	4.65
1684	113	104.89	7.73
1685	101	104.11	-2.98
1686	117	101.33	15.46
1687	99	101.44	-2.40
1688	91	100.89	-9.80
1689	94	99.78	-5.79
1690	72	97.56	-26.19
1691	116	98.11	18.23
1692	105	98.78	6.29
1693	103	103.11	-0.10
1694	81	107.33	-24.53
1695	122	113.78	7.22
1696	105	115.99	-9.48
1697	130	117.78	10.37
1698	132	123.67	6.73
1699	130	127.89	1.65
1700	136	126.56	7.46
1701	121	130.78	-7.47
1702	156	129.78	20.20
1703	119	129.44	-8.06
1704	110	130.56	-15.74
1705	143	132.22	8.15
1706	121	131.33	-7.86
1707	129	129.56	-0.42
1708	140	130.11	7.60
1709	151	133.44	13.15

1710	113	133.99	-15.67
1711	140	136.67	2.43
1712	124	139.56	-11.14
1713	140	144.22	-2.92
1714	148	145.22	1.91
1715	145	149.44	-2.97
1716	155	147.67	4.96
1717	182	149.89	21.42
1718	160	152.33	5.03
1719	151	155.56	-2.92
1720	124	159.56	-22.28
1721	144	158.78	-9.30
1722	162	158.33	2.31
1723	177	158.33	11.78
1724	181	154.33	17.27
1725	148	155.22	-4.65
1726	178	153.67	15.83
1727	160	151.99	5.26
1728	115	150.56	-23.61
1729	132	147.67	-10.60
1730	130	146.11	-11.02
1731	147	143.56	2.39
1732	164	141.78	15.67
1733	155	142.56	8.72
1734	134	142.67	-6.07
1735	155	141.78	9.32
1736	144	140.33	2.61
1737	122	133.89	-8.87
1738	133	128.78	3.27
1739	122	125.99	-3.17
1740	134	119.44	12.18
1741	106	114.89	-7.73
1742	109	113.67	-4.10
1743	109	110.56	-1.40
1744	96	106.67	-9.99
1745	103	103.78	-0.74
1746	111	104.56	6.16
1747	105	104.51	0.87
1748	87	104.46	-16.71

1749	108	104.41	3.44
1750	113	104.36	8.28

<u>Ely Holy Trinity Burial Data</u>

Year	Raw Data	Moving Average	Standard Error
1559	46	49.53	-7.13
1560	70	47.07	48.72
1561	25	44.59	-43.94
1562	39	42.13	-7.43
1563	43	39.67	8.40
1564	23	39.44	-41.69
1565	48	34.22	40.25
1566	36	36.99	-2.70
1567	27	39.11	-30.96
1568	44	37.99	15.78
1569	23	36.44	-36.89
1570	50	32.22	55.17
1571	58	33.22	74.58
1572	33	33.67	-1.97
1573	9	32.33	-72.16
1574	10	32.56	-69.28
1575	45	42.11	6.86
1576	31	39.56	-21.62
1577	32	39.11	-18.18
1578	25	44.44	-43.74
1579	136	46.44	192.82
1580	35	44.56	-21.44
1581	29	43.22	-32.90
1582	57	46.33	23.02
1583	28	49.99	-43.99
1584	28	42.22	-33.68
1585	19	45.78	-58.49
1586	60	48.56	23.56
1587	58	49.89	16.25
1588	66	56.33	17.15
1589	67	62.44	7.29
1590	54	66.89	-19.26
1591	69	66.22	4.19
1592	86	66.44	29.43
1593	83	76.78	8.10

1594	59	79.67	-25.94
1595	54	81.99	-34.14
1596	60	82.44	-27.22
1597	159	78.11	103.55
1598	93	76.33	21.83
1599	75	73.89	1.50
1600	73	73.33	-0.45
1601	47	74.11	-36.58
1602	67	59.56	12.50
1603	37	54.33	-31.90
1604	49	49.89	-1.78
1605	67	46.89	42.89
1606	28	46.78	-40.14
1607	46	43.89	4.81
1608	35	43.56	-19.64
1609	46	43.78	5.07
1610	46	40.22	14.36
1611	41	43.44	-5.62
1612	34	45.56	-25.36
1613	51	47.99	6.25
1614	35	48.22	-27.41
1615	57	49.22	15.80
1616	65	50.33	29.13
1617	57	53.33	6.87
1618	48	51.99	-7.69
1619	55	54.22	1.43
1620	51	56.22	-9.28
1621	61	63.33	-3.68
1622	39	65.89	-40.80
1623	55	66.44	-17.22
1624	75	64.33	16.58
1625	129	65.33	97.44
1626	80	75.22	6.35
1627	53	83.33	-36.39
1628	36	84.11	-57.19
1629	60	81.99	-26.82
1630	150	72.78	106.10
1631	112	70.22	59.49
1632	62	70.33	-11.84

1633	56	72.22	-22.46
1634	46	72.44	-36.50
1635	57	72.67	-21.55
1636	54	70.33	-23.22
1637	53	72.22	-26.61
1638	62	71.44	-13.21
1639	152	72.33	110.13
1640	91	72.22	26.00
1641	79	72.11	9.55
1642	49	70.78	-30.76
1643	54	70.33	-23.22
1644	56	64.78	-13.55
1645	53	64.56	-17.90
1646	41	68.22	-39.90
1647	58	70.89	-18.18
1648	102	72.67	40.36
1649	89	78.78	12.97
1650	112	82.44	35.84
1651	73	84.99	-14.11
1652	70	86.99	-19.54
1653	111	89.44	24.09
1654	86	98.22	-12.44
1655	64	96.11	-33.41
1656	76	99.56	-23.66
1657	124	108.78	13.99
1658	168	111.99	50.00
1659	93	114.33	-18.65
1660	104	118.44	-12.19
1661	153	121.99	25.40
1662	140	119.44	17.20
1663	107	114.89	-6.86
1664	101	116.78	-13.51
1665	108	119.89	-9.91
1666	101	123.33	-18.10
1667	127	120.11	5.73
1668	110	116.67	-5.71
1669	132	117.11	12.71
1670	184	116.44	58.01
1671	111	114.89	-3.38

1672	76	110.44	-31.18
1673	105	109.89	-4.44
1674	102	110.56	-7.73
1675	87	105.44	-17.49
1676	87	109.22	-20.34
1677	105	115.56	-9.13
1678	138	117.56	17.39
1679	138	119.67	15.32
1680	145	121.78	19.06
1681	133	123.56	7.64
1682	123	126.99	-3.14
1683	121	121.89	-0.72
1684	106	118.89	-10.84
1685	103	120.44	-14.48
1686	136	119.22	14.07
1687	92	114.56	-19.68
1688	111	110.22	0.70
1689	159	109.44	45.27
1690	122	110.22	10.68
1691	81	103.67	-21.86
1692	82	99.56	-17.63
1693	99	94.11	5.19
1694	110	89.78	22.52
1695	77	82.78	-6.97
1696	55	80.22	-31.44
1697	62	76.56	-19.01
1698	120	71.89	66.92
1699	59	71.99	-18.05
1700	58	70.11	-17.27
1701	49	72.67	-32.56
1702	57	71.67	-20.46
1703	111	68.89	61.12
1704	60	72.89	-17.68
1705	78	74.22	5.08
1706	53	76.33	-30.56
1707	95	81.99	15.85
1708	95	81.99	15.85
1709	70	87.99	-20.45
1710	68	87.78	-22.53

1711	108	90.99	18.68
1712	111	85.89	29.23
1713	114	82.44	38.27
1714	76	82.11	-7.44
1715	82	86.11	-4.77
1716	49	90.22	-45.68
1717	64	89.56	-28.53
1718	67	97.99	-31.63
1719	104	100.99	2.97
1720	145	99.99	45.00
1721	105	101.89	3.05
1722	190	99.99	90.00
1723	103	103.44	-0.42
1724	73	101.11	-27.80
1725	66	97.22	-32.11
1726	47	93.56	-49.76
1727	98	79.99	22.50
1728	83	79.11	4.91
1729	110	79.67	38.07
1730	72	83.22	-13.48
1731	68	84.67	-19.68
1732	95	82.67	14.91
1733	78	84.22	-7.38
1734	98	82.56	18.70
1735	60	82.78	-27.51
1736	80	84.89	-5.75
1737	97	80.78	20.08
1738	95	81.99	15.85
1739	74	79.22	-6.59
1740	87	76.89	13.15
1741	58	75.99	-23.68
1742	89	72.11	23.42
1743	73	70.67	3.30
1744	39	70.99	-45.07
1745	72	70.11	2.69
1746	62	71.89	-13.75
1747	82	69.22	18.45
1748	77	68.67	12.13
1749	79	69.67	13.39

1750	74	69.56	6.38
1751	65	69.99	-7.14
1752	68	67.33	0.99
1753	48	67.33	-28.71
1754	71	70.89	0.15
1755	66	67.89	-2.78
1756	58	67.67	-14.28
1757	77	68.79	11.91
1758	111	69.93	58.72
1759	47	71.07	-33.86
1760	63	72.19	-12.74

Haddenham Burial Data

Year	Raw Data	Moving Average	Standard Error
1570	18	40.27	-55.29
1571	43	36.69	17.16
1572	46	33.13	38.83
1573	41	29.57	38.66
1574	26	25.99	0.17E-03
1575	15	24.33	-38.35
1576	34	20.22	68.13
1577	7	15.89	-55.94
1578	4	11.44	-65.04
1579	3	9.11	-67.07
1580	6	7.99	-24.99
1581	7	4.67	50.00
1582	1	5.11	-80.43
1583	5	5.56	-9.99
1584	5	8.22	-39.18
1585	4	8.89	-54.99
1586	11	9.67	13.79
1587	8	11.89	-32.71
1588	27	12.22	120.90
1589	12	11.78	1.88
1590	14	25.11	-44.24

1591	21	24.44	-14.09
1592	8	23.67	-66.19
1593	1	22.99	-95.65
1594	124	23.22	433.97
1595	5	25.56	-80.43
1596	1	25.56	-96.08
1597	21	28.78	-27.02
1598	14	35.67	-60.74
1599	35	24.99	40.00
1600	21	27.22	-22.85
1601	37	30.56	21.09
1602	63	32.22	95.51
1603	28	35.11	-20.25
1604	25	34.89	-28.34
1605	31	34.89	-11.14
1606	36	34.44	4.51
1607	40	30.67	30.43
1608	33	29.99	10.00
1609	21	30.56	-31.27
1610	33	31.44	4.94
1611	29	30.33	-4.39
1612	22	29.67	-25.84
1613	30	28.56	5.05
1614	39	28.44	37.10
1615	26	26.67	-2.49
1616	34	28.56	19.06
1617	23	28.56	-19.45
1618	20	28.44	-29.68
1619	17	27.67	-38.55
1620	46	30.11	52.76
1621	22	32.44	-32.19
1622	29	33.56	-13.57
1623	32	34.22	-6.49
1624	48	34.56	38.90
1625	55	33.44	64.45
1626	33	36.11	-8.61
1627	26	40.78	-36.23
1628	20	47.33	-57.74
1629	36	45.33	-20.58

1630	46	41.44	10.99
1631	71	38.99	82.05
1632	91	38.56	136.02
1633	30	37.33	-19.64
1634	20	37.11	-46.10
1635	11	38.22	-71.22
1636	22	34.67	-36.53
1637	9	25.78	-65.08
1638	34	24.44	39.09
1639	56	25.99	115.38
1640	39	31.22	24.91
1641	11	32.67	-66.32
1642	18	35.33	-49.05
1643	34	38.11	-10.78
1644	58	38.44	50.86
1645	35	39.56	-11.51
1646	33	41.33	-20.16
1647	59	40.22	46.68
1648	59	36.44	61.89
1649	49	30.89	58.63
1650	27	33.11	-18.45
1651	8	32.44	-75.34
1652	0	29.33	-99.99
1653	8	28.78	-72.20
1654	55	31.78	73.07
1655	27	33.99	-20.58
1656	31	37.89	-18.18
1657	54	44.56	21.19
1658	76	49.33	54.05
1659	47	46.67	0.71
1660	43	44.44	-3.24
1661	60	45.89	30.75
1662	51	42.78	19.22
1663	31	37.78	-17.94
1664	7	36.33	-80.73
1665	44	31.56	39.43
1666	26	31.11	-16.42
1667	31	31.67	-2.10
1668	34	32.22	5.51

1669	0	36.22	-99.99
1670	56	37.67	48.67
1671	56	40.67	37.70
1672	36	42.22	-14.73
1673	43	43.22	-0.51
1674	57	47.89	19.02
1675	53	47.22	12.23
1676	45	50.33	-10.59
1677	43	54.33	-20.85
1678	42	54.99	-23.63
1679	50	54.89	-8.90
1680	84	49.99	68.00
1681	72	45.33	58.82
1682	49	44.67	9.70
1683	56	41.56	34.75
1684	9	35.99	-74.99
1685	3	26.67	-88.74
1686	37	18.67	98.21
1687	14	13.33	5.00
1688	0	7.11	-99.99
1689	0	6.11	-99.99
1690	0	5.78	-99.99
1691	1	3.56	-71.87
1692	0	4.67	-99.99
1693	0	7.33	-99.99
1694	0	9.44	-99.99
1695	17	13.11	29.66
1696	24	15.99	50.00
1697	24	18.11	32.51
1698	19	21.67	-12.30
1699	33	25.11	31.41
1700	27	27.56	-2.01
1701	19	31.22	-39.14
1702	32	31.89	0.34
1703	31	32.89	-5.74
1704	39	33.33	17.00
1705	57	33.56	69.86
1706	30	36.33	-17.43
1707	28	39.11	-28.40

1708	37	38.89	-4.85
1709	29	37.99	-23.68
1710	44	35.44	24.13
1711	57	35.56	60.31
1712	29	34.99	-17.14
1713	31	36.33	-14.67
1714	34	37.67	-9.73
1715	31	37.56	-17.45
1716	23	36.89	-37.65
1717	49	38.89	26.00
1718	41	39.78	3.07
1719	43	41.44	3.75
1720	51	42.11	21.10
1721	47	42.99	9.30
1722	39	40.99	-4.87
1723	49	41.67	17.60
1724	37	42.11	-12.13
1725	31	42.11	-26.38
1726	31	41.67	-25.59
1727	47	40.33	16.52
1728	47	38.67	21.55
1729	51	38.56	32.27
1730	43	39.22	9.63
1731	27	43.22	-37.53
1732	34	42.11	-19.26
1733	36	41.56	-13.36
1734	37	40.22	-8.01
1735	67	35.78	87.26
1736	37	37.11	-0.29
1737	42	35.89	17.02
1738	39	34.99	11.42
1739	3	37.33	-91.96
1740	39	32.56	19.79
1741	23	30.33	-24.17
1742	28	28.99	-3.44
1743	58	30.67	89.13
1744	24	33.56	-28.47
1745	17	33.78	-49.67
1746	30	33.89	-11.47

1747	54	32.99	63.63
1748	29	30.67	-5.43
1749	41	30.78	33.21
1750	24	33.22	-27.75
1751	20	32.56	-38.56
1752	37	28.78	28.57
1753	25	28.56	-12.45
1754	39	25.78	51.29
1755	24	25.78	-6.89
1756	20	27.11	-26.22
1757	27	26.01	3.80
1758	16	24.91	-35.77
1759	24	23.81	0.79
1760	32	22.71	40.90

March Burial Data

Year	Raw Data	Moving Average	Standard Error
1558	26	36.07	-27.91
1559	43	33.05	30.10
1560	52	30.03	73.14
1561	9	27.02	-66.68
1562	21	23.99	-12.49
1563	14	24.78	-43.49
1564	14	22.33	-37.31
1565	25	19.56	27.84
1566	12	20.22	-40.65
1567	33	20.67	59.67
1568	21	23.78	-11.68
1569	27	24.56	9.95
1570	15	26.11	-42.55
1571	25	26.56	-5.85
1572	42	25.78	62.93
1573	21	26.44	-20.58
1574	39	25.22	54.62
1575	16	25.67	-37.66

1576	26	25.67	1.29
1577	27	23.11	16.82
1578	16	23.89	-33.02
1579	19	25.99	-26.92
1580	25	28.33	-11.76
1581	19	29.33	-35.22
1582	28	30.44	-8.02
1583	58	32.78	76.94
1584	37	35.44	4.38
1585	35	35.89	-2.47
1586	37	37.89	-2.34
1587	37	44.11	-16.12
1588	43	42.67	0.78
1589	29	41.11	-29.45
1590	37	38.67	-4.31
1591	84	37.33	125.00
1592	45	37.11	21.25
1593	23	35.89	-35.91
1594	13	35.89	-63.77
1595	25	35.56	-29.68
1596	35	29.22	19.77
1597	32	26.78	19.50
1598	29	26.99	7.40
1599	34	27.33	24.39
1600	27	26.11	3.40
1601	23	26.33	-12.65
1602	25	25.44	-1.74
1603	16	25.99	-38.46
1604	14	25.11	-44.24
1605	37	24.11	53.45
1606	24	24.78	-3.13
1607	34	25.33	34.21
1608	26	25.89	0.44
1609	18	27.89	-35.45
1610	29	26.44	9.66
1611	30	27.33	9.75
1612	21	27.56	-23.79
1613	32	27.67	15.66
1614	24	28.33	-15.29

1615	32	26.56	20.50
1616	36	26.56	35.56
1617	27	25.89	4.29
1618	24	26.78	-10.37
1619	13	25.78	-49.56
1620	30	26.33	13.92
1621	15	25.78	-41.81
1622	40	24.99	60.00
1623	15	24.99	-39.99
1624	37	25.44	45.41
1625	31	23.56	31.60
1626	20	25.33	-21.05
1627	24	26.22	-8.47
1628	17	28.22	-39.76
1629	13	26.99	-51.85
1630	31	24.44	26.81
1631	48	26.11	83.82
1632	33	24.44	35.00
1633	26	25.89	0.44
1634	8	31.56	-74.64
1635	35	34.99	0.13E-03
1636	9	35.67	-74.76
1637	30	37.11	-19.16
1638	64	37.33	71.42
1639	62	38.56	60.80
1640	54	36.99	45.94
1641	46	38.99	17.94
1642	28	38.89	-27.99
1643	19	34.33	-44.66
1644	21	30.56	-31.27
1645	27	27.11	-0.40
1646	29	23.67	22.53
1647	23	24.99	-7.99
1648	28	28.22	-0.78
1649	23	30.44	-24.45
1650	15	30.11	-50.18
1651	40	27.22	46.93
1652	48	29.44	63.01
1653	41	32.89	24.66

1654	24	38.67	-37.93
1655	3	39.44	-92.39
1656	43	37.56	14.49
1657	59	34.56	70.73
1658	75	32.22	132.75
1659	22	33.67	-34.65
1660	23	35.33	-34.90
1661	21	38.22	-45.05
1662	20	37.22	-46.26
1663	37	37.11	-0.29
1664	18	44.11	-59.19
1665	69	50.99	35.29
1666	50	60.33	-17.12
1667	74	67.22	10.08
1668	85	69.67	22.00
1669	85	71.33	19.15
1670	105	65.99	59.09
1671	82	64.78	26.58
1672	59	59.67	-1.11
1673	33	52.11	-36.67
1674	21	54.33	-61.34
1675	39	52.89	-26.26
1676	28	56.44	-50.39
1677	17	66.11	-74.28
1678	105	72.89	44.05
1679	92	77.78	18.28
1680	114	80.22	42.10
1681	146	84.44	72.89
1682	94	91.11	3.17
1683	65	86.67	-24.99
1684	61	84.99	-28.23
1685	66	85.33	-22.65
1686	77	77.89	-1.14
1687	65	74.67	-12.94
1688	77	73.56	4.68
1689	117	73.99	58.10
1690	79	73.44	7.56
1691	65	73.89	-12.02
1692	55	73.11	-24.77

1693	65	70.89	-8.30
1694	61	64.99	-6.15
1695	81	59.99	35.00
1696	58	56.11	3.36
1697	57	53.22	7.09
1698	64	47.56	34.57
1699	34	51.11	-33.47
1700	30	51.44	-41.68
1701	29	56.44	-48.62
1702	14	57.33	-75.58
1703	93	58.11	60.03
1704	84	63.44	32.39
1705	103	65.11	58.19
1706	65	67.56	-3.78
1707	71	74.44	-4.62
1708	82	69.78	17.51
1709	45	68.33	-34.14
1710	51	66.11	-22.85
1711	76	64.44	17.93
1712	51	61.89	-17.59
1713	71	57.33	23.83
1714	83	58.78	41.20
1715	50	68.44	-26.94
1716	48	76.22	-37.02
1717	41	78.33	-47.65
1718	58	76.89	-24.56
1719	138	77.22	78.70
1720	146	78.22	86.64
1721	70	77.56	-9.74
1722	58	77.22	-24.89
1723	86	74.67	15.17
1724	59	63.67	-7.32
1725	42	52.89	-20.58
1726	38	47.78	-20.46
1727	35	43.11	-18.81
1728	39	36.44	7.01
1729	49	35.56	37.81
1730	24	34.67	-30.76
1731	16	32.99	-51.51

1732	26	33.44	-22.25
1733	51	34.11	49.51
1734	34	33.89	0.32
1735	23	32.56	-29.35
1736	39	34.22	13.96
1737	45	33.44	34.55
1738	47	35.89	30.95
1739	12	39.56	-69.66
1740	31	41.99	-26.19
1741	19	43.33	-56.15
1742	73	41.89	74.27
1743	67	42.89	56.21
1744	45	48.56	-7.32
1745	51	51.99	-1.92
1746	32	55.11	-41.93
1747	56	54.56	2.64
1748	63	51.44	22.46
1749	62	50.67	22.36
1750	47	49.89	-5.79
1751	68	50.99	33.33
1752	39	50.44	-22.68
1753	38	47.78	-20.46
1754	44	47.67	-7.69
1755	42	49.56	-15.24
1756	51	46.99	8.51
1757	39	49.22	-20.75
1758	61	51.43	18.60
1759	64	53.65	19.29
1760	45	55.87	-19.45

Wisbech St Mary Burial Data

Year	Raw Data	Moving Average	Standard Error
1557	55	29.51	86.37
1558	14	26.66	-47.48
1559	9	23.81	-62.20

1560	17	20.96	-18.89
1561	13	18.11	-28.22
1562	14	13.33	5.00
1563	21	11.78	78.30
1564	10	10.78	-7.21
1565	10	8.89	12.50
1566	12	7.44	61.19
1567	0	5.89	-99.99
1568	0	3.56	-99.99
1569	0	2.44	-99.99
1570	0	1.33	-99.99
1571	0	.0	0.
1572	0	.0	0.
1573	0	.56	-99.99
1574	0	1.11	-100.00
1575	0	1.11	-100.00
1576	0	1.78	-99.99
1577	5	2.89	73.07
1578	5	4.44	12.50
1579	0	6.99	-99.99
1580	6	10.11	-40.65
1581	10	11.33	-11.76
1582	14	11.44	22.33
1583	23	13.22	73.94
1584	28	16.67	68.00
1585	11	19.67	-44.06
1586	6	20.89	-71.27
1587	21	21.33	-1.56
1588	31	22.11	40.20
1589	33	20.44	61.41
1590	21	19.99	5.00
1591	18	19.99	-9.99
1592	30	17.78	68.75
1593	13	15.11	-13.97
1594	7	11.56	-39.42
1595	6	10.22	-41.30
1596	1	10.22	-90.21
1597	7	7.67	-8.69
1598	1	6.89	-85.48

1599	9	6.67	35.00
1600	18	6.56	174.57
1601	7	7.99	-12.49
1602	6	8.89	-32.49
1603	5	10.44	-52.12
1604	5	10.44	-52.12
1605	14	9.78	43.18
1606	15	10.33	45.16
1607	15	11.44	31.06
1608	9	11.22	-19.80
1609	12	11.89	0.93
1610	12	10.89	10.20
1611	16	9.99	60.00
1612	3	9.67	-68.96
1613	11	9.56	15.11
1614	5	9.11	-45.12
1615	7	9.22	-24.09
1616	12	8.89	35.00
1617	8	9.56	-16.27
1618	8	9.67	-17.24
1619	13	10.56	23.15
1620	13	10.33	25.80
1621	9	11.33	-20.58
1622	12	11.56	3.84
1623	13	12.11	7.33
1624	5	11.78	-57.54
1625	21	11.33	85.29
1626	10	13.56	-26.22
1627	13	13.56	-4.09
1628	10	13.78	-27.41
1629	9	14.99	-39.99
1630	29	14.67	97.72
1631	12	14.44	-16.92
1632	15	14.11	6.29
1633	16	16.56	-3.35
1634	18	19.99	-9.99
1635	8	22.22	-63.99
1636	10	24.22	-58.71
1637	32	23.44	36.49

1638	40	21.67	84.61
1639	49	19.67	149.15
1640	30	18.78	59.76
1641	8	17.67	-54.71
1642	0	14.89	-99.99
1643	0	10.44	-99.99
1644	0	5.11	-99.99
1645	0	2.22	-99.99
1646	7	2.33	200.00
1647	0	3.11	-99.99
1648	1	3.33	-69.99
1649	4	3.89	2.85
1650	9	6.56	37.28
1651	7	8.56	-18.18
1652	2	9.89	-79.77
1653	5	12.22	-59.09
1654	24	15.33	56.52
1655	25	14.33	74.41
1656	12	13.78	-12.90
1657	22	13.56	62.29
1658	32	13.22	142.01
1659	0	10.78	-99.99
1660	2	8.89	-77.49
1661	0	8.11	-99.99
1662	2	5.67	-64.70
1663	2	2.56	-21.73
1664	8	5.22	53.19
1665	5	5.11	-2.17
1666	0	6.44	-99.99
1667	4	9.22	-56.62
1668	24	12.89	86.20
1669	1	13.67	-92.68
1670	12	13.99	-14.28
1671	27	15.78	71.12
1672	35	16.11	117.24
1673	15	13.67	9.75
1674	8	13.89	-42.39
1675	16	12.56	27.43
1676	7	9.56	-26.74

1677	2	5.67	-64.70
1678	3	3.99	-24.99
1679	0	3.11	-99.99
1680	0	1.33	-99.99
1681	0	.67	-99.99
1682	0	.44	-99.99
1683	0	.11	-99.99
1684	0	.11	-99.99
1685	1	.11	-99.99
1686	0	.22	-99.99
1687	0	.22	-99.99
1688	0	.22	-99.99
1689	0	.22	-99.99
1690	1	.11	-99.99
1691	0	.11	-99.99
1692	0	.11	-99.99
1693	0	.33	-99.99
1694	0	1.78	-99.99
1695	0	3.44	-99.99
1696	0	4.99	-99.99
1697	2	7.44	-73.13
1698	13	9.44	37.64
1699	16	11.89	34.57
1700	14	14.11	-0.78
1701	22	19.78	11.23
1702	18	21.99	-18.18
1703	22	22.78	-3.41
1704	20	23.11	-13.46
1705	51	22.99	121.73
1706	22	22.78	-3.41
1707	20	23.44	-14.69
1708	19	21.89	-13.19
1709	13	20.99	-38.09
1710	20	17.22	16.12
1711	24	16.99	41.17
1712	8	15.99	-49.99
1713	12	15.44	-22.30
1714	17	16.22	4.79
1715	20	17.44	14.64

1716	11	17.22	-36.12
1717	14	17.78	-21.24
1718	20	18.11	10.42
1719	31	17.22	80.00
1720	22	16.11	36.55
1721	13	17.44	-25.47
1722	15	17.22	-12.90
1723	9	15.56	-42.14
1724	10	12.89	-22.41
1725	23	11.33	102.94
1726	12	11.11	8.00
1727	5	11.78	-57.54
1728	7	13.22	-47.05
1729	8	14.11	-43.30
1730	11	14.22	-22.65
1731	21	14.22	47.65
1732	22	15.33	43.47
1733	18	17.22	4.51
1734	24	18.67	28.57
1735	12	19.67	-38.98
1736	15	19.56	-23.29
1737	24	20.11	19.33
1738	21	21.89	-4.06
1739	20	22.78	-12.19
1740	20	25.22	-20.70
1741	27	26.78	0.83
1742	34	27.11	25.41
1743	32	28.33	12.94
1744	34	28.22	20.47
1745	29	29.11	-0.38
1746	27	28.99	-6.89
1747	32	27.82	15.03
1748	19	26.63	-28.66
1749	28	25.45	10.01
1750	26	24.27	7.14

Wisbech St Peter Burial Data

Year	Raw Data	Moving Average	Standard Error
1559	27	32.36	-16.55
1560	50	32.57	53.50
1561	21	32.79	-35.95
1562	33	33.01	-0.16E-01
1563	28	33.22	-15.71
1564	31	36.67	-15.45
1565	41	39.78	3.07
1566	39	41.99	-7.14
1567	29	42.99	-32.55
1568	58	44.89	29.20
1569	78	46.56	67.54
1570	41	46.99	-12.76
1571	42	48.89	-14.09
1572	45	48.33	-6.89
1573	46	45.99	0.16E-03
1574	45	44.11	2.01
1575	56	45.33	23.52
1576	24	44.44	-45.99
1577	37	42.56	-13.05
1578	61	41.78	46.01
1579	52	43.89	18.48
1580	34	47.89	-29.00
1581	28	54.11	-48.25
1582	39	56.56	-31.04
1583	64	71.67	-10.69
1584	92	77.89	18.11
1585	80	83.78	-4.50
1586	59	92.44	-36.17
1587	197	105.89	86.04
1588	108	115.99	-6.89
1589	87	118.22	-26.40
1590	106	116.22	-8.79
1591	160	120.99	32.23
1592	155	106.99	44.85
1593	112	106.99	4.67

1594	62	105.56	-41.26
1595	102	103.89	-1.81
1596	71	95.33	-25.52
1597	108	85.44	26.39
1598	74	81.67	-9.38
1599	91	82.33	10.52
1600	83	79.89	3.89
1601	66	83.67	-21.11
1602	78	82.78	-5.77
1603	68	81.78	-16.84
1604	80	81.44	-1.77
1605	105	80.56	30.34
1606	100	85.99	16.27
1607	65	89.44	-27.32
1608	88	93.99	-6.38
1609	75	95.56	-21.51
1610	115	94.99	21.05
1611	109	96.22	13.27
1612	109	106.78	2.08
1613	94	106.89	-12.05
1614	100	111.22	-10.08
1615	111	105.22	5.49
1616	160	104.22	53.51
1617	89	99.67	-10.70
1618	114	96.89	17.66
1619	61	99.33	-38.59
1620	100	97.22	2.85
1621	68	90.67	-24.99
1622	69	89.99	-23.33
1623	122	87.33	39.69
1624	92	86.67	6.15
1625	101	83.99	20.23
1626	83	87.56	-5.20
1627	90	95.89	-6.14
1628	55	92.33	-40.43
1629	76	92.56	-17.88
1630	100	93.89	6.50
1631	144	95.67	50.52
1632	90	94.22	-4.48

1633	94	99.56	-5.58
1634	113	111.78	1.09
1635	99	122.89	-19.43
1636	77	121.78	-36.77
1637	103	125.67	-18.03
1638	186	130.44	42.58
1639	200	129.89	53.97
1640	134	133.11	0.59
1641	125	133.56	-6.40
1642	137	128.99	6.20
1643	108	118.33	-8.73
1644	128	105.99	20.75
1645	81	99.78	-18.81
1646	62	97.99	-36.73
1647	90	99.33	-9.39
1648	89	102.44	-13.12
1649	78	102.99	-24.27
1650	109	107.99	0.92
1651	149	115.44	29.06
1652	136	118.99	14.28
1653	133	130.78	1.69
1654	126	142.33	-11.47
1655	129	148.78	-13.29
1656	122	146.33	-16.62
1657	195	143.78	35.62
1658	182	142.56	27.66
1659	167	144.11	15.88
1660	127	145.78	-12.88
1661	113	146.78	-23.01
1662	122	141.78	-13.94
1663	140	142.44	-1.71
1664	144	142.11	1.32
1665	131	146.78	-10.74
1666	150	153.67	-2.38
1667	188	158.33	18.73
1668	164	165.33	-0.80
1669	169	161.33	4.75
1670	175	155.67	12.41
1671	164	149.89	9.41

1672	203	144.33	40.64
1673	108	143.67	-24.82
1674	80	147.22	-45.66
1675	98	147.44	-33.53
1676	138	149.11	-7.45
1677	158	146.22	8.05
1678	201	151.22	32.91
1679	177	155.33	13.94
1680	179	155.44	15.15
1681	177	150.67	17.47
1682	153	147.89	3.45
1683	117	139.33	-16.02
1684	99	132.22	-25.12
1685	95	124.11	-23.45
1686	133	118.11	12.60
1687	124	120.11	3.23
1688	113	122.56	-7.79
1689	106	128.33	-17.40
1690	123	129.44	-4.97
1691	171	128.67	32.90
1692	139	128.44	8.21
1693	151	126.44	19.42
1694	105	125.89	-16.59
1695	126	123.44	2.07
1696	122	116.67	4.57
1697	95	114.22	-16.82
1698	101	116.33	-13.18
1699	101	121.22	-16.68
1700	110	128.22	-14.21
1701	117	143.89	-18.68
1702	170	150.11	13.24
1703	149	154.22	-3.38
1704	189	158.56	19.20
1705	263	160.67	63.69
1706	151	160.56	-5.95
1707	138	160.44	-13.98
1708	140	155.22	-9.80
1709	129	146.44	-11.91
1710	116	133.89	-13.36

1711	169	135.67	24.57
1712	102	137.99	-26.08
1713	110	135.67	-18.91
1714	150	143.11	4.81
1715	167	158.78	5.17
1716	159	168.89	-5.85
1717	119	178.44	-33.31
1718	196	186.56	5.06
1719	257	190.33	35.02
1720	260	190.89	36.20
1721	188	192.56	-2.36
1722	183	197.67	-7.41
1723	184	209.11	-12.00
1724	172	201.67	-14.71
1725	174	193.67	-10.15
1726	165	190.99	-13.61
1727	299	187.33	59.60
1728	190	184.22	3.13
1729	188	183.56	2.42
1730	164	182.44	-10.10
1731	150	179.22	-16.30
1732	156	165.89	-5.96
1733	166	168.99	-1.77
1734	164	165.67	-1.00
1735	136	162.11	-16.10
1736	179	165.56	8.12
1737	218	167.67	30.01
1738	158	165.56	-4.56
1739	132	162.44	-18.74
1740	181	159.67	13.36
1741	175	153.22	14.21
1742	147	143.22	2.63
1743	136	142.11	-4.30
1744	111	147.67	-24.83
1745	121	142.67	-15.18
1746	128	140.99	-9.21
1747	148	144.68	2.29
1748	182	148.37	22.66
1749	136	152.05	-10.55

1750	160	155.73	2.73

<u>Doddington Marriage Data</u>

Year	Raw Data	Moving Average	Standard Error
1681	5	7.13	-29.90
1682	10	7.68	30.15
1683	13	8.23	57.89
1684	5	8.78	-43.07
1685	7	9.33	-24.99
1686	8	9.22	-13.25
1687	8	8.56	-6.49
1688	22	8.11	171.23
1689	6	8.44	-28.94
1690	4	7.99	-49.99
1691	4	8.56	-53.24
1692	9	8.11	10.95
1693	8	5.99	33.33
1694	3	6.67	-54.99
1695	13	6.89	88.70
1696	4	7.56	-47.05
1697	3	7.11	-57.81
1698	12	6.89	74.19
1699	6	7.11	-15.62
1700	10	7.22	38.46
1701	5	9.22	-45.78
1702	6	10.44	-42.55
1703	5	10.67	-53.12
1704	14	12.33	13.51
1705	22	13.44	63.63
1706	14	14.67	-4.54
1707	14	15.11	-7.35
1708	21	16.11	30.34
1709	20	15.44	29.49
1710	16	14.89	7.46
1711	10	14.89	-32.83
1712	14	15.99	-12.49
1713	8	15.22	-47.44
1714	17	14.11	20.47
1715	14	13.33	5.00

1716	24	14.33	67.44
1717	14	14.99	-6.66
1718	10	15.78	-36.61
1719	9	15.22	-40.87
1720	19	14.89	27.61
1721	20	14.33	39.53
1722	15	13.99	7.14
1723	12	13.89	-13.59
1724	11	13.67	-19.51
1725	19	12.44	52.67
1726	11	12.11	-9.17
1727	9	12.56	-28.31
1728	7	13.44	-47.93
1729	8	12.99	-38.46
1730	17	12.22	39.09
1731	19	12.11	56.88
1732	20	11.99	66.66
1733	7	12.44	-43.74
1734	12	13.67	-12.19
1735	10	12.89	-22.41
1736	8	11.56	-30.76
1737	11	10.56	4.21
1738	19	12.67	50.00
1739	10	12.56	-20.35
1740	7	13.22	-47.05
1741	11	13.78	-20.16
1742	26	13.89	87.20
1743	11	12.99	-15.38
1744	16	12.56	27.43
1745	13	12.33	5.40
1746	12	12.89	-6.89
1747	11	11.11	-0.99
1748	6	10.89	-44.89
1749	5	10.99	-54.54
1750	16	11.33	41.17
1751	10	10.89	-8.16
1752	9	11.89	-24.29
1753	17	12.22	39.09
1754	16	12.89	24.13

1755	8	11.99	-33.33
1756	20	11.89	68.22
1757	9	11.29	-20.27
1758	11	10.69	2.91
1759	8	10.09	-20.70
1760	9	9.49	-5.15

Ely Holy Trinity Marriage Data

Year	Raw Data	Moving Average	Standard Error
1559	18	17.98	0.12
1560	14	16.84	-16.88
1561	22	15.71	40.02
1562	17	14.58	16.61
1563	9	13.44	-33.05
1564	10	13.11	-23.72
1565	9	12.99	-30.76
1566	9	12.22	-26.36
1567	13	12.44	4.46
1568	15	13.33	12.50
1569	13	13.78	-5.64
1570	15	14.11	6.29
1571	19	13.99	35.71
1572	17	13.22	28.57
1573	14	12.67	10.52
1574	12	12.11	-0.91
1575	8	11.22	-28.71
1576	6	11.11	-45.99
1577	10	11.67	-14.28
1578	8	12.44	-35.71
1579	7	13.11	-46.61
1580	18	13.56	32.78
1581	22	14.78	48.87
1582	21	14.89	41.04
1583	18	15.89	13.28
1584	12	18.22	-34.14
1585	17	18.56	-8.38

1586	11	18.78	-41.42
1587	17	18.56	-8.38
1588	28	18.56	50.89
1589	21	20.44	2.71
1590	24	21.33	12.50
1591	19	21.78	-12.75
1592	18	22.44	-19.80
1593	29	20.89	38.83
1594	25	20.99	19.04
1595	15	19.78	-24.15
1596	23	19.44	18.28
1597	14	19.78	-29.21
1598	22	18.78	17.15
1599	13	18.22	-28.65
1600	16	17.99	-11.11
1601	21	17.22	21.93
1602	20	16.89	18.42
1603	20	16.89	18.42
1604	13	16.67	-21.99
1605	16	17.56	-8.86
1606	11	17.33	-36.53
1607	22	16.67	32.06
1608	11	17.11	-35.71
1609	24	17.44	37.57
1610	19	17.44	8.91
1611	14	18.56	-24.55
1612	24	18.56	29.34
1613	16	19.78	-19.10
1614	16	19.56	-18.18
1615	21	19.67	6.77
1616	22	21.33	3.12
1617	22	22.67	-2.94
1618	22	22.89	-3.88
1619	20	22.56	-11.32
1620	29	22.22	30.50
1621	36	21.78	65.30
1622	18	20.89	-13.82
1623	13	21.22	-38.74
1624	18	21.67	-16.92

1625	18	21.22	-15.18
1626	14	18.99	-26.31
1627	25	19.89	25.69
1628	24	21.22	13.08
1629	25	21.33	17.18
1630	16	21.67	-26.15
1631	26	21.89	18.78
1632	25	21.11	18.42
1633	19	20.67	-8.06
1634	21	20.56	2.16
1635	16	21.11	-24.21
1636	18	20.67	-12.90
1637	20	20.67	-3.22
1638	24	21.44	11.91
1639	21	20.89	0.95
1640	22	20.78	5.88
1641	25	20.78	20.32
1642	26	21.67	20.02
1643	16	21.33	-24.99
1644	15	22.22	-32.49
1645	18	22.67	-20.58
1646	28	21.89	27.91
1647	21	21.99	-4.54
1648	29	23.99	20.83
1649	26	25.78	0.86
1650	18	25.56	-29.56
1651	27	24.99	8.01
1652	34	25.11	35.39
1653	31	23.99	29.16
1654	16	24.44	-34.54
1655	23	27.11	-15.16
1656	22	27.89	-21.11
1657	19	29.11	-34.73
1658	30	27.99	7.14
1659	42	31.44	33.56
1660	34	31.44	8.12
1661	45	33.11	35.90
1662	21	34.44	-39.03
1663	47	34.67	35.57

1664	23	32.33	-28.86
1665	37	31.78	16.43
1666	31	31.33	-1.06
1667	32	33.33	-3.99
1668	21	33.11	-36.57
1669	29	34.78	-16.61
1670	41	34.78	17.89
1671	39	35.11	11.07
1672	45	35.11	28.16
1673	38	37.67	0.88
1674	37	36.99	0.16E-03
1675	34	35.78	-4.96
1676	32	36.89	-13.25
1677	44	35.22	24.92
1678	23	35.56	-35.31
1679	30	34.78	-13.73
1680	49	36.33	34.86
1681	30	36.67	-18.18
1682	41	36.44	12.50
1683	30	37.89	-20.82
1684	48	38.11	25.94
1685	35	35.11	-0.31
1686	42	34.99	20.01
1687	36	32.33	11.34
1688	32	32.11	-0.34
1689	22	28.99	-24.13
1690	29	27.67	4.81
1691	17	26.22	-35.16
1692	28	24.44	14.54
1693	20	22.78	-12.19
1694	23	23.33	-1.42
1695	29	22.44	29.20
1696	20	22.78	-12.19
1697	17	21.99	-22.72
1698	27	22.44	20.29
1699	21	22.78	-7.80
1700	20	21.56	-7.21
1701	21	21.99	-4.54
1702	24	21.89	9.64

1703	26	21.67	20.01
1704	18	21.67	-16.92
1705	24	21.22	13.08
1706	16	20.22	-20.87
1707	25	20.56	21.62
1708	21	19.89	5.58
1709	16	20.44	-21.73
1710	12	20.67	-41.93
1711	27	21.67	24.61
1712	20	21.56	-7.21
1713	23	22.99	0.13E-03
1714	26	24.33	6.84
1715	25	26.33	-5.06
1716	24	25.89	-7.29
1717	34	27.56	23.38
1718	28	29.33	-4.54
1719	30	30.56	-1.81
1720	23	30.44	-24.45
1721	35	30.89	13.30
1722	39	29.22	33.46
1723	37	28.89	28.07
1724	24	27.33	-12.19
1725	28	27.22	2.85
1726	19	27.11	-29.91
1727	25	25.56	-2.17
1728	16	24.33	-34.24
1729	22	24.33	-9.58
1730	34	25.22	34.80
1731	25	25.56	-2.17
1732	26	25.33	2.63
1733	24	25.89	-7.29
1734	36	25.99	38.46
1735	22	24.89	-11.60
1736	23	23.44	-1.89
1737	21	22.11	-5.02
1738	23	21.11	8.94
1739	24	19.33	24.13
1740	12	20.11	-40.33
1741	14	19.89	-29.60

1742	15	19.99	-24.99
1743	20	19.11	4.65
1744	29	18.67	55.35
1745	21	19.33	8.62
1746	22	19.33	13.79
1747	15	19.44	-22.85
1748	20	19.33	3.44
1749	18	17.78	1.25
1750	14	17.78	-21.24
1751	16	16.78	-4.63
1752	19	17.44	8.91
1753	15	16.67	-9.99
1754	21	16.99	23.52
1755	13	17.89	-27.32
1756	21	19.67	6.77
1757	13	20.88	-37.74
1758	21	22.09	-4.97
1759	22	23.32	-5.64
1760	32	24.53	30.43

Haddenham Marriage Data

Year	Raw Data	Moving Average	Standard Error
1570	11	12.79	-14.06
1571	9	11.77	-23.51
1572	14	10.73	30.43
1573	12	9.69	23.71
1574	7	8.67	-19.23
1575	8	8.33	-3.99
1576	10	8.22	21.62
1577	7	7.33	-4.54
1578	0	6.78	-99.99
1579	8	6.67	20.00
1580	8	6.33	26.31
1581	6	5.22	14.89
1582	7	5.22	34.04

1583	6	6.78	-11.47
1584	5	7.89	-36.61
1585	0	8.22	-99.99
1586	7	8.67	-19.23
1587	14	8.67	61.53
1588	18	9.11	97.56
1589	11	8.99	22.22
1590	10	10.78	-7.21
1591	7	10.56	-33.68
1592	10	9.22	8.43
1593	4	7.22	-44.61
1594	16	6.44	148.27
1595	5	7.56	-33.82
1596	2	7.78	-74.28
1597	0	7.67	-99.99
1598	4	9.44	-57.64
1599	20	10.22	95.65
1600	9	11.67	-22.85
1601	9	13.11	-31.35
1602	20	14.99	33.33
1603	23	15.78	45.77
1604	18	16.22	10.95
1605	15	16.33	-8.16
1606	17	17.33	-1.92
1607	11	17.44	-36.94
1608	24	16.22	47.94
1609	10	15.33	-34.78
1610	18	14.99	20.00
1611	21	13.89	51.20
1612	12	14.33	-16.27
1613	10	13.11	-23.72
1614	12	13.33	-9.99
1615	7	12.11	-42.20
1616	15	11.33	32.35
1617	13	11.22	15.84
1618	12	12.67	-5.26
1619	7	13.11	-46.61
1620	14	13.22	5.88
1621	11	11.89	-7.47

1622	23	11.67	97.14
1623	16	11.22	42.57
1624	8	11.78	-32.07
1625	3	11.89	-74.76
1626	11	11.44	-3.88
1627	8	9.99	-19.99
1628	12	9.99	20.00
1629	15	11.22	33.66
1630	7	11.89	-41.12
1631	10	12.11	-17.43
1632	16	12.78	25.21
1633	19	12.44	52.67
1634	9	11.67	-22.85
1635	13	12.33	5.40
1636	14	12.56	11.50
1637	9	12.67	-28.94
1638	8	11.44	-30.09
1639	13	11.56	12.50
1640	12	11.33	5.88
1641	17	10.99	54.54
1642	8	10.67	-24.99
1643	10	10.67	-6.24
1644	11	9.44	16.47
1645	11	8.56	28.57
1646	6	6.99	-14.28
1647	8	6.22	28.57
1648	2	5.11	-60.86
1649	4	3.89	2.85
1650	3	3.22	-6.89
1651	1	2.67	-62.49
1652	0	2.11	-99.99
1653	0	2.33	-99.99
1654	5	3.33	50.00
1655	1	3.67	-72.72
1656	3	4.33	-30.76
1657	4	4.99	-19.99
1658	13	5.44	138.77
1659	6	5.56	8.00
1660	7	5.99	16.66

1661	6	6.44	-6.89
1662	4	6.78	-40.98
1663	6	5.89	1.88
1664	5	5.99	-16.66
1665	7	5.22	34.04
1666	7	4.78	46.51
1667	5	5.22	-4.25
1668	7	4.89	43.18
1669	0	4.89	-99.99
1670	2	4.78	-58.13
1671	8	4.11	94.59
1672	3	4.33	-30.76
1673	5	3.99	25.00
1674	6	3.99	50.00
1675	1	4.22	-76.31
1676	7	3.99	75.00
1677	4	4.78	-16.27
1678	0	4.99	-99.99
1679	4	5.44	-26.53
1680	6	5.44	10.20
1681	10	5.56	80.00
1682	7	6.11	14.54
1683	10	7.11	40.62
1684	1	7.89	-87.32
1685	8	7.78	2.85
1686	9	7.33	22.72
1687	9	8.22	9.45
1688	11	7.67	43.47
1689	5	7.56	-33.82
1690	6	6.67	-9.99
1691	15	6.44	132.75
1692	5	5.89	-15.09
1693	0	5.67	-99.99
1694	0	6.22	-99.99
1695	7	6.99	0.02E-04
1696	4	5.99	-33.33
1697	9	6.22	44.64
1698	10	6.99	42.85
1699	13	7.89	64.78

1700	6	7.44	-19.40
1701	7	7.67	-8.69
1702	7	8.11	-13.69
1703	8	7.78	2.85
1704	3	7.44	-59.70
1705	6	7.33	-18.18
1706	13	7.56	72.05
1707	7	7.33	-4.54
1708	10	8.67	15.38
1709	5	9.56	-47.67
1710	9	10.56	-14.73
1711	5	10.33	-51.61
1712	20	10.56	89.47
1713	11	10.99	0.58E-04
1714	15	11.99	25.00
1715	11	11.99	-8.33
1716	9	13.11	-31.35
1717	14	11.99	16.66
1718	14	12.22	14.54
1719	9	12.33	-27.02
1720	15	12.78	17.39
1721	10	12.99	-23.07
1722	13	12.78	1.73
1723	16	11.89	34.57
1724	15	11.56	29.80
1725	11	10.99	0.58E-04
1726	12	10.99	9.09
1727	6	10.89	-44.89
1728	6	10.56	-43.15
1729	10	10.11	-1.09
1730	10	10.33	-3.22
1731	12	9.89	21.34
1732	13	10.22	27.17
1733	11	9.99	10.00
1734	13	10.89	19.38
1735	8	10.33	-22.58
1736	9	10.33	-12.90
1737	4	10.33	-61.29
1738	18	9.78	84.09

1739	5	9.33	-46.42
1740	12	9.33	28.57
1741	13	9.78	32.95
1742	6	9.99	-39.99
1743	9	8.99	0.17E-04
1744	8	9.33	-14.28
1745	13	9.33	39.28
1746	6	8.99	-33.33
1747	9	10.22	-11.95
1748	8	9.78	-18.18
1749	12	9.78	22.72
1750	10	9.11	9.75
1751	17	9.11	86.58
1752	5	8.67	-42.30
1753	8	8.67	-7.69
1754	7	7.78	-9.99
1755	6	7.44	-19.40
1756	5	7.22	-30.76
1757	8	7.77	2.93
1758	4	8.32	-51.93
1759	7	8.87	-21.10
1760	15	9.42	59.19

March Marriage Data

Year	Raw Data	Moving Average	Standard Error
1558	7	8.69	-19.43
1559	6	8.49	-29.31
1560	11	8.29	32.70
1561	11	8.09	35.98
1562	7	7.89	-11.26
1563	10	8.33	20.00
1564	7	8.44	-17.10
1565	5	8.11	-38.35
1566	7	8.99	-22.22
1567	11	8.99	22.22

1568	7	8.89	-21.24
1569	8	8.78	-8.86
1570	19	8.67	119.23
1571	7	8.33	-15.99
1572	9	8.22	9.45
1573	6	8.78	-31.64
1574	4	8.89	-54.99
1575	4	7.89	-49.29
1576	10	8.89	12.50
1577	12	8.78	36.70
1578	9	9.56	-5.81
1579	10	9.44	5.88
1580	16	10.44	53.19
1581	8	10.22	-21.73
1582	13	9.78	32.95
1583	3	10.44	-71.27
1584	13	10.33	25.80
1585	8	9.33	-14.28
1586	8	9.67	-17.24
1587	15	8.89	68.75
1588	9	8.78	2.53
1589	7	8.78	-20.25
1590	11	8.89	23.75
1591	6	9.11	-34.14
1592	2	8.22	-75.67
1593	13	7.44	74.62
1594	9	7.44	20.89
1595	10	6.99	42.85
1596	7	6.56	6.77
1597	2	7.33	-72.72
1598	7	6.44	8.62
1599	7	6.78	3.27
1600	2	6.89	-70.96
1601	9	6.78	32.78
1602	5	7.67	-34.78
1603	12	8.22	45.94
1604	11	8.56	28.57
1605	6	9.22	-34.93
1606	10	9.22	8.43

1607	12	9.67	24.13
1608	10	9.22	8.43
1609	8	8.22	-2.70
1610	9	8.56	5.19
1611	9	8.33	8.00
1612	8	7.67	4.34
1613	2	7.99	-74.99
1614	9	8.11	10.95
1615	8	7.99	0.71E-04
1616	6	7.67	-21.73
1617	13	7.67	69.56
1618	9	8.89	1.25
1619	8	8.99	-11.11
1620	6	8.67	-30.76
1621	8	8.56	-6.49
1622	13	7.78	67.14
1623	10	7.99	25.00
1624	5	8.11	-38.35
1625	5	8.44	-40.78
1626	6	8.99	-33.33
1627	11	8.44	30.26
1628	9	8.11	10.95
1629	9	8.89	1.25
1630	13	9.56	36.04
1631	8	9.99	-19.99
1632	7	9.67	-27.58
1633	12	10.11	18.68
1634	11	9.89	11.23
1635	10	9.11	9.75
1636	8	10.22	-21.73
1637	13	12.67	2.63
1638	7	12.67	-44.73
1639	6	13.22	-54.62
1640	18	13.22	36.13
1641	29	13.33	117.50
1642	12	12.99	-7.69
1643	16	13.99	14.28
1644	10	14.22	-29.68
1645	9	13.11	-31.35

1646	10	10.89	-8.16
1647	16	10.22	56.52
1648	8	8.44	-5.26
1649	8	7.33	9.09
1650	9	7.99	12.50
1651	6	9.11	-34.14
1652	0	8.89	-99.99
1653	0	8.44	-99.99
1654	15	8.22	82.43
1655	20	7.78	157.14
1656	14	9.22	51.80
1657	4	9.89	-59.55
1658	6	10.11	-40.65
1659	5	9.44	-47.05
1660	19	8.56	122.07
1661	6	8.11	-26.02
1662	2	9.22	-78.31
1663	9	10.22	-11.95
1664	12	10.56	13.68
1665	10	11.78	-15.09
1666	14	12.67	10.52
1667	15	14.89	0.74
1668	8	16.33	-51.02
1669	30	17.33	73.07
1670	14	17.89	-21.73
1671	22	18.11	21.47
1672	22	18.22	20.73
1673	21	18.89	11.17
1674	15	16.67	-9.99
1675	16	16.67	-3.99
1676	16	16.56	-3.35
1677	14	15.44	-9.35
1678	10	16.33	-38.77
1679	14	16.67	-15.99
1680	21	17.11	22.72
1681	12	17.67	-32.07
1682	29	17.99	61.11
1683	18	17.78	1.25
1684	20	18.44	8.43

1685	21	18.89	11.17
1686	17	20.11	-15.46
1687	8	19.11	-58.13
1688	20	17.78	12.50
1689	25	17.11	46.10
1690	23	16.33	40.81
1691	20	16.33	22.44
1692	6	17.78	-66.24
1693	14	19.22	-27.16
1694	14	17.99	-22.22
1695	17	17.22	-1.29
1696	21	16.89	24.34
1697	33	18.56	77.84
1698	14	19.44	-27.99
1699	16	19.11	-16.27
1700	17	18.33	-7.27
1701	21	18.11	15.95
1702	22	16.67	32.00
1703	11	16.56	-33.55
1704	10	16.99	-41.17
1705	19	17.11	11.03
1706	20	16.11	24.13
1707	13	15.99	-18.74
1708	20	17.11	16.88
1709	18	18.22	-1.21
1710	12	18.11	-33.74
1711	21	18.11	15.95
1712	21	18.44	13.85
1713	20	18.33	9.09
1714	18	18.11	-0.61
1715	20	18.33	9.09
1716	16	19.22	-16.76
1717	19	18.33	3.63
1718	16	18.67	-14.28
1719	14	20.33	-31.14
1720	29	21.22	36.64
1721	13	20.33	-36.06
1722	23	21.89	5.07
1723	33	21.67	52.30

1724	28	22.22	26.00
1725	8	21.22	-62.30
1726	33	22.56	46.30
1727	14	23.22	-39.71
1728	19	22.67	-16.17
1729	20	22.33	-10.44
1730	25	25.11	-0.44
1731	29	24.56	18.09
1732	28	24.89	12.50
1733	25	24.33	2.73
1734	33	26.33	25.31
1735	28	24.99	12.00
1736	17	21.89	-22.33
1737	14	19.99	-29.99
1738	38	19.67	93.22
1739	13	17.56	-25.94
1740	1	16.89	-94.07
1741	11	16.89	-34.86
1742	22	16.67	32.00
1743	14	12.44	12.50
1744	22	11.33	94.11
1745	17	12.89	31.89
1746	12	14.33	-16.27
1747	0	14.56	-99.99
1748	3	14.78	-79.69
1749	15	14.89	0.74
1750	24	14.11	70.07
1751	24	14.99	60.00
1752	16	17.33	-7.69
1753	23	19.33	18.96
1754	10	19.56	-48.86
1755	20	19.56	2.27
1756	21	18.78	11.83
1757	21	19.14	9.69
1758	17	19.51	-12.87
1759	24	19.88	20.73
1760	17	20.24	-16.02

Wisbech St Mary Marriage Data

Year	Raw Data	Moving Average	Standard Error
1570	2	4.19	-52.38
1571	5	4.15	20.48
1572	5	4.09	21.95
1573	5	4.05	23.45
1574	4	3.99	0.95E-04
1575	5	4.11	21.62
1576	4	3.99	0.21E-03
1577	2	3.78	-47.05
1578	4	3.33	20.00
1579	3	3.11	-3.57
1580	4	2.99	33.33
1581	3	3.22	-6.89
1582	1	3.67	-72.72
1583	2	3.67	-45.45
1584	4	3.67	9.09
1585	6	3.44	74.19
1586	6	3.44	74.19
1587	4	3.89	2.85
1588	3	4.56	-34.14
1589	2	4.33	-53.84
1590	3	4.67	-35.71
1591	5	4.67	7.14
1592	8	5.11	56.52
1593	2	5.22	-61.70
1594	9	5.78	55.76
1595	6	6.89	-12.90
1596	8	6.89	16.12
1597	4	6.33	-36.84
1598	7	7.44	-5.97
1599	13	6.89	88.70
1600	5	6.99	-28.57
1601	3	6.44	-53.44
1602	12	6.11	96.36
1603	4	5.44	-26.53
1604	7	3.99	75.00

1605	3	3.99	-24.99
1606	1	3.99	-74.99
1607	1	3.22	-68.96
1608	0	3.11	-99.99
1609	5	2.67	87.50
1610	3	2.78	8.00
1611	5	2.99	66.66
1612	3	3.11	-3.57
1613	3	3.44	-12.90
1614	4	3.33	20.00
1615	3	3.33	-9.99
1616	2	3.22	-37.93
1617	3	3.11	-3.57
1618	4	3.33	20.00
1619	3	3.33	-9.99
1620	4	3.22	24.13
1621	2	3.56	-43.74
1622	5	3.67	36.36
1623	4	3.78	5.88
1624	2	3.67	-45.45
1625	5	3.44	45.16
1626	4	3.99	0.95E-04
1627	5	3.78	32.35
1628	2	3.56	-43.74
1629	2	3.56	-43.74
1630	7	3.67	90.90
1631	3	3.78	-20.58
1632	2	3.99	-49.99
1633	2	4.22	-52.63
1634	6	4.89	22.72
1635	5	4.44	12.50
1636	7	4.67	50.00
1637	4	5.33	-24.99
1638	8	6.56	22.03
1639	3	6.78	-55.73
1640	5	6.67	-24.99
1641	8	6.33	26.31
1642	13	6.78	91.80
1643	8	6.67	20.00

1644	4	6.99	-42.85
1645	4	7.44	-46.26
1646	8	8.44	-5.26
1647	7	8.33	-15.99
1648	6	8.11	-26.02
1649	9	7.67	17.39
1650	17	7.22	135.38
1651	12	6.33	89.47
1652	6	6.11	-1.81
1653	0	5.44	-99.99
1654	0	4.44	-99.99
1655	0	2.56	-99.99
1656	5	1.33	275.00
1657	0	.67	-99.99
1658	0	.67	-99.99
1659	0	.67	-99.99
1660	1	1.67	-39.99
1661	0	1.67	-99.99
1662	0	2.11	-99.99
1663	0	2.33	-99.99
1664	9	2.33	285.71
1665	5	2.22	125.00
1666	4	2.22	80.00
1667	2	2.22	-9.99
1668	0	2.56	-100.00
1669	0	1.56	-99.99
1670	0	1.33	-99.99
1671	0	.99	-99.99
1672	3	.78	285.71
1673	0	.89	-99.99
1674	3	1.22	145.45
1675	1	1.33	-24.99
1676	0	1.56	-100.00
1677	1	1.56	-35.71
1678	3	1.78	68.75
1679	1	1.78	-43.74
1680	2	1.99	0.90E-04
1681	3	2.11	42.10
1682	2	2.33	-14.28

1683	3	2.11	42.10
1684	3	2.11	42.10
1685	1	2.22	-54.99
1686	3	2.22	35.00
1687	1	2.22	-54.99
1688	1	2.22	-54.99
1689	3	2.22	35.00
1690	3	2.33	28.57
1691	2	2.33	-14.28
1692	3	2.33	28.57
1693	3	2.67	12.50
1694	2	2.56	-21.73
1695	3	2.89	3.84
1696	1	3.11	-67.85
1697	4	2.99	33.33
1698	2	3.56	-43.74
1699	6	4.22	42.10
1700	4	5.11	-21.73
1701	2	5.78	-65.38
1702	8	6.99	14.28
1703	8	7.78	2.85
1704	11	7.99	37.50
1705	7	8.99	-22.22
1706	15	10.44	43.61
1707	9	10.89	-17.34
1708	8	10.89	-26.53
1709	13	9.99	30.00
1710	15	9.78	53.40
1711	12	9.78	22.72
1712	8	10.44	-23.40
1713	3	10.33	-70.96
1714	5	9.99	-49.99
1715	15	8.89	68.75
1716	15	8.33	80.00
1717	7	7.99	-12.49
1718	10	7.99	25.00
1719	5	7.99	-37.49
1720	7	7.33	-4.54
1721	5	6.78	-26.22

1722	3	6.89	-56.45
1723	5	6.99	-28.57
1724	9	7.11	26.56
1725	10	6.56	52.54
1726	8	6.44	24.13
1727	11	6.99	57.14
1728	6	8.11	-26.02
1729	2	7.67	-73.91
1730	4	7.11	-43.74
1731	8	6.67	20.00
1732	15	6.11	145.45
1733	5	5.56	-9.99
1734	5	5.56	-9.99
1735	4	5.44	-26.53
1736	6	4.78	25.58
1737	1	3.67	-72.72
1738	2	3.89	-48.57
1739	3	3.99	-24.99
1740	2	4.33	-53.84
1741	5	4.11	21.62
1742	7	4.11	70.27
1743	6	3.99	50.00
1744	7	4.78	46.51
1745	4	5.11	-21.73
1746	1	5.11	-80.43
1747	1	4.89	-79.54
1748	10	5.67	76.47
1749	5	5.56	-9.99
1750	5	6.67	-24.99
1751	5	7.56	-33.82
1752	13	7.78	67.14
1753	6	7.33	-18.18
1754	14	7.11	96.87
1755	9	7.22	24.61
1756	3	6.89	-56.45
1757	6	6.33	-5.26
1758	3	5.99	-49.99
1759	6	4.99	20.00
1760	2	4.56	-56.09

Wisbech St Peter Marriage Data

Year	Raw Data	Moving Average	Standard Error
1558	2	11.79	-83.05
1559	14	12.35	13.36
1560	22	12.89	70.54
1561	18	13.45	33.82
1562	14	13.99	0.06E-04
1563	14	16.56	-15.43
1564	13	16.22	-19.86
1565	11	15.89	-30.76
1566	18	16.33	10.20
1567	25	17.67	41.50
1568	11	17.56	-37.34
1569	19	18.11	4.90
1570	22	18.67	17.85
1571	26	18.44	40.96
1572	13	17.78	-26.87
1573	18	17.99	0.84E-04
1574	16	18.33	-12.72
1575	16	19.22	-16.76
1576	19	19.22	-1.15
1577	13	20.11	-35.35
1578	22	20.56	7.02
1579	30	22.11	35.67
1580	26	24.89	4.46
1581	21	25.99	-19.23
1582	22	26.56	-17.15
1583	30	27.89	7.56
1584	41	27.78	47.60
1585	29	28.22	2.75
1586	18	29.22	-38.40
1587	34	31.33	8.51
1588	29	31.99	-9.37
1589	30	30.56	-1.81
1590	30	29.99	0.15E-03
1591	41	30.67	33.69
1592	36	29.78	20.89

1593	28	28.56	-1.94
1594	24	27.99	-14.28
1595	24	26.99	-11.11
1596	26	23.99	8.33
1597	18	22.67	-20.58
1598	25	22.78	9.75
1599	21	23.99	-12.49
1600	14	24.67	-43.24
1601	24	26.33	-8.86
1602	29	27.33	6.09
1603	35	27.22	28.57
1604	30	28.67	4.65
1605	41	30.22	35.66
1606	27	31.11	-13.21
1607	24	29.44	-18.49
1608	34	28.33	20.00
1609	28	27.89	0.39
1610	32	25.22	26.87
1611	14	26.11	-46.38
1612	25	25.56	-2.17
1613	26	25.44	2.18
1614	17	25.78	-34.05
1615	35	24.78	41.25
1616	19	25.44	-25.32
1617	33	24.56	34.38
1618	31	23.67	30.98
1619	23	24.33	-5.47
1620	20	22.78	-12.19
1621	17	23.44	-27.48
1622	18	22.33	-19.40
1623	23	21.89	5.07
1624	21	23.11	-9.13
1625	25	22.44	11.38
1626	23	23.67	-2.81
1627	27	25.89	4.29
1628	34	27.56	23.38
1629	14	27.78	-49.59
1630	28	28.44	-1.56
1631	38	28.78	32.04

1632	38	29.44	29.05
1633	23	27.78	-17.19
1634	31	29.99	3.33
1635	26	31.11	-16.42
1636	33	31.33	5.31
1637	19	30.89	-38.48
1638	34	30.11	12.91
1639	38	29.89	27.13
1640	40	30.11	32.84
1641	34	30.78	10.46
1642	16	31.56	-49.29
1643	29	29.22	-0.76
1644	28	26.56	5.43
1645	39	24.67	58.10
1646	26	23.89	8.83
1647	13	23.33	-44.28
1648	14	23.11	-39.42
1649	23	25.89	-11.15
1650	27	26.67	1.25
1651	11	26.44	-58.40
1652	27	28.67	-5.81
1653	53	28.99	82.75
1654	46	29.44	56.22
1655	24	28.56	-15.95
1656	33	29.99	10.00
1657	17	29.22	-41.82
1658	27	27.22	-0.81
1659	19	24.44	-22.27
1660	24	25.33	-5.26
1661	20	23.99	-16.66
1662	35	24.44	43.18
1663	21	24.11	-12.90
1664	32	23.78	34.57
1665	21	24.89	-15.62
1666	21	26.78	-21.57
1667	24	25.56	-6.08
1668	16	26.22	-38.98
1669	34	26.44	28.57
1670	37	26.56	39.33

1671	24	25.67	-6.49
1672	27	26.44	2.10
1673	34	27.44	23.88
1674	22	27.11	-18.85
1675	13	25.78	-49.56
1676	31	25.99	19.23
1677	25	25.44	-1.74
1678	31	25.22	22.90
1679	25	25.56	-2.17
1680	26	27.44	-5.26
1681	22	27.78	-20.79
1682	32	30.78	3.97
1683	25	30.99	-19.35
1684	30	31.78	-5.59
1685	34	30.89	10.07
1686	52	30.22	72.05
1687	33	29.78	10.82
1688	32	29.56	8.27
1689	18	30.22	-40.44
1690	16	29.78	-46.26
1691	28	27.78	0.14
1692	23	27.33	-15.85
1693	36	26.44	36.13
1694	30	26.89	11.57
1695	34	28.78	18.14
1696	29	28.78	0.77
1697	24	30.11	-20.29
1698	22	29.78	-26.11
1699	33	31.67	4.21
1700	28	31.89	-12.19
1701	35	33.67	3.96
1702	33	37.11	-11.07
1703	47	41.22	14.01
1704	36	43.22	-16.70
1705	45	45.99	-2.17
1706	55	46.56	18.13
1707	59	49.56	19.05
1708	51	49.56	2.91
1709	53	51.44	3.02

1710	40	51.78	-22.74
1711	60	51.33	16.88
1712	47	50.44	-6.82
1713	53	47.89	10.67
1714	48	46.89	2.36
1715	51	47.56	7.24
1716	51	48.89	4.31
1717	28	49.67	-43.62
1718	44	48.99	-10.20
1719	46	48.89	-5.90
1720	72	48.33	48.96
1721	54	46.22	16.82
1722	47	47.22	-0.47
1723	47	47.89	-1.85
1724	46	48.22	-4.60
1725	32	45.89	-30.26
1726	37	44.89	-17.57
1727	50	44.11	13.35
1728	49	43.56	12.50
1729	51	42.67	19.53
1730	45	42.67	5.46
1731	40	41.56	-3.74
1732	42	40.67	3.27
1733	38	38.56	-1.44
1734	32	36.67	-12.72
1735	27	34.33	-21.35
1736	42	34.22	22.72
1737	30	34.44	-12.90
1738	34	33.89	0.93
1739	24	34.56	-30.54
1740	39	34.22	13.96
1741	44	32.78	34.23
1742	33	32.67	1.02
1743	38	31.89	19.16
1744	24	33.44	-28.23
1745	29	32.24	-10.06
1746	29	31.04	-6.58
1747	27	29.84	-9.53
1748	38	28.64	32.66